ALASKA DEPARTMENT OF FISH AND GAME

DIVISION OF COMMERCIAL FISHERIES

ANNUAL MANAGEMENT REPORT
UPPER COOK INLET

1984

Submitted By

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INTRODUCTION

Upper Cook Inlet consists of that portion of Cook Inlet north of the latitude of Anchor Point and is divided into two districts, Central and Northern (Figure 1). The Central District is approximately 75 mi long, averages 32 mi in width, and consists of six subdistricts. The Northern District is 50 mi long, averages 20 mi in width, and is divided into two subdistricts. Currently, all five species of Pacific salmon (*Oncorhynchus sp.*), razor clams (*Siliqua patula*), and Pacific herring (*Clupea harengus pallasi*) are subject to commercial harvest in Upper Cook Inlet. In addition to these fisheries, this report will discuss subsistence and personal use salmon fisheries occurring in Upper Cook Inlet.

Salmon

Since the inception of the fishery in 1882, fish traps, set gill nets, drift gill nets, purse seines and beach seines have all been used, with varying degrees of success, to commercially harvest salmon in Upper Cook Inlet. Currently, set gill nets are the only legal gear type in the Northern District, while both set and drift gear is permitted in the Central District. The use of seines is restricted to the Chinitna Bay Subdistrict. Drift gill nets historically have averaged 60 percent of the annual harvest with set gill nets accounting for virtually all of the remainder (Appendix Tables 1 through 6).

All five species of Pacific salmon are subjected to commercial harvest as they migrate to their streams of origin (Appendix Table 7). Run timing and migration routes overlap to such a degree that the commercial fishery is largely mixed-stock and mixed-species in nature (Figure 2). Typically, the Upper Cook Inlet salmon fishery contributes less than five percent of the statewide harvest.

In terms of economic value, sockeye salmon (*O. nerka*) are by far the most important species harvested in the upper inlet followed in order by chum salmon (*O. keta*), pink salmon (*O. gorbuscha*) (even years), cohó salmon (*O. kisutch*), pink salmon (odd years), and chinook salmon (*O. tshawytscha*). A history of the exvessel value of the Upper Cook Inlet salmon fishery is presented in Appendix Table 8.

Herring

The Upper Cook Inlet commercial herring fishery began in 1973 as a sporadic harvest of bait-quality fish along the east side of the Central District and has expanded in recent years to include small-scale sac roe fisheries in Tuxedni and Chinitna Bays (Appendix Table 9). Currently, the total harvest has averaged less than 400 tons having an exvessel value below $200,000.

Because the glacial waters of Upper Cook Inlet preclude the use of visual observations for biomass assessment, the management approach used for these stocks has necessarily departed from the standard techniques of the more traditional herring fisheries. Current management strategy includes a 35-ton quota in Chinitna Bay and a policy of holding harvests in other areas to

approximately the historic average until the subsequent recruitment from recent brood years can be evaluated. Gill nets are the only legal gear for herring in Upper Cook Inlet with set gill nets being used almost exclusively. Gear is concentrated in the Clam Gulch area along the east side, in the Snug Harbor and Magnetic Island areas of Tuxedni Bay and near Clam Cove and Camp Point in Chinitna Bay.

Razor Clams

The commercial harvest of the Pacific razor clam from Cook Inlet dates back to 1919. Harvest levels have fluctuated from no fishery for as many as eight consecutive years to production in excess of half a million pounds in 1922 (Appendix Table 10). The sporadic nature of the fishery has been a function of marketing rather than availability of the resource.

Razor clams are present in many areas of Cook Inlet with particularly dense populations occurring near Polly Creek on the western shore and from Clam Gulch to Ninilchik on the eastern shore. In 1959, the eastside beaches were reserved for sport harvest only and since that time all commercial production has come from the west side, principally from the Polly Creek area. Razor clams destined for the bait market may be taken from any area along the west side except that portion of the Polly Creek beach (Figure 3) "certified" for the human consumption market. Certification of a clam beach requires periodic sampling to insure that toxins associated with paralytic shellfish poisoning (PSP) are not present in harmful amounts. Division of Agriculture regulations require that bait clams harvested from non-certified beaches be dyed a specific color to prevent their use for human consumption.

Virtually all of the commercial harvesting of razor clams to date has been by hand-digging. Current regulations allow the use of hydraulic and mechanical harvesters south of Spring Point and also along a designated one-mile section of Polly Creek beach. Although there have been numerous attempts to develop a feasible razor clam dredge, they have been only partially successful.

1984 COMMERCIAL SALMON FISHERY

The 1984 commercial harvest of 3.9 million salmon in Upper Cook Inlet was slightly above the long-term averages but well below the record harvest of 6.7 million salmon in 1983. The harvest was comprised of above average catches of sockeye salmon and coho salmon, average catches of chum salmon and chinook salmon and a below average even-year catch of pink salmon. Prices for salmon were generally improved over 1983, particularly for sockeye salmon which sold for $1.00 per pound, up $.30 from the previous year. The estimated exvessel value of the salmon harvest was $18.0 million, a substantial decline from the $28.8 million estimated for the previous year.

A total of 588 drift gillnet permits and 744 set gillnet permits were issued by the Commercial Fisheries Entry Commission for Cook Inlet in 1984 which represents no significant change from the number issued for the last several years (Appendix Table 11).

Season Parameters

The 1984 season represented the first attempt at formally forecasting the commercial sockeye salmon harvest and the results (2.2 million forecast, 2.1 million harvest) were very encouraging. The forecast was based on average recruit per spawner ratios from the monitored systems and utilized average marine maturity schedules to estimate the expected total return. Similar data does not yet exist for the remaining salmon species and projections of their returns were based on a subjective evaluation of parent-year escapements (Table 1).

The only significant regulatory change affecting the 1984 commercial fishery was the reinstatement of delayed opening dates for the Central District eastside set gillnet fishery. Under the new regulation adopted by the Board of Fisheries in March of 1984, the season for set gillnets south of a regulatory marker approximately 4 mi north of the Kasilof River would not open until 2 July or until 75,000 sockeye salmon had entered the Kasilof River, whichever event occurred first. For the area north of the regulatory marker up to Boulder Point, the season would not open until 9 July or until 100,000 sockeye salmon had entered the Kenai River, whichever occurred first. Drift gillnetting was prohibited within two miles of the affected beaches until the setnet season opened. Both areas opened on the specified dates as neither river system approached the escapement levels needed for an earlier opening. The Kasilof River sockeye salmon escapement through 2 July was 33,140 while the Kenai River total through 9 July was 15,068. A request by eastside set gillnetters to have the delayed season openings enjoined was denied in Kenai Superior Court.

As in the past, current fishery information and emergency order announcements were distributed through recorded phone messages, information programs (Fishermen's Corner) and public service messages broadcast by local radio stations. The stations carrying Fishermen's Corner and emergency order accouncements included KSRM (Kenai-Soldotna), KGTL (Homer), KBBI (Homer), and KABN (Big Lake).

Sockeye Salmon

The 1984 sockeye salmon harvest of 2.1 million was substantially above the long-term average of 1.4 million but well below the record harvest of 5.0 million taken the previous year. The exvessel value of the sockeye salmon catch was $13.5 million or 75 percent of the total value of the salmon harvest.

Management of the Upper Cook Inlet sockeye salmon fishery integrates information received from a variety of programs which together provide an in-season model of the actual return. These programs include offshore test fishing, stock separation, district test fishing, sonar escapement enumeration and comparative analysis of historic commercial harvest and effort levels.

The offshore test fishing program utilizes a chartered gillnet vessel fishing standardized stations on a transect crossing Cook Inlet from Anchor Point to the Red River delta. The purpose of the program is to provide an in-season projection of sockeye salmon run strength by estimating fish passage rates

(computed by correlating the vessel's daily catch with subsequent commercial harvests and escapement) and fitting these rates to the appropriate run-timing curve (Waltemyer 1986). In 1984, the charter was awarded to the F/V Corrina Kay.

Use of scale pattern analysis to apportion commercial sockeye salmon catches to river of origin was first applied to Upper Cook Inlet in 1977 and has since become an integral part of the salmon management regime. Although this program is most effective in post-season analysis of total return by river system, in-season use is possible subject to some severe limitations. Due to the sharp and late entry pattern of sockeye salmon returning to the Susitna River, adequate escapement samples (i.e., scale from fish of known origin) used to build a stock separation model are frequently unavailable. This occurred in 1984 with insufficient Susitna River sockeye salmon escapement samples available during the critical management period in mid-July. However, using the hypothesis that growth characteristics within a river system are to some extent consistent within a brood year, models were constructed based on data gathered from 4-year old fish that returned the previous year. This methodology was then applied to current catches and provided useful information in-season. Shortly after mid-July, it was possible to construct models using current-year samples (Table 2).

A district test fishing project utilizes six to eight commercial drift gillnet vessels to locate concentrations of sockeye salmon within the Central District during the interval separating commercial periods. Because sockeye salmon migrate through the District in a predictable manner, knowledge of the location of large schools is important in assessing the progress of the fish toward their river of origin. Because this effort represents a relatively small sampling level, the program is not capable of determining abundance. This program was employed on two occasions in 1984 during an extended closure of the drift fishery. The test-fishing period on 21 July was aborted early in the day due to inclement weather but a second attempt on 23 July yielded a good indication of sockeye salmon distribution and assisted in subsequent management decisions.

The use of hydroacoustic equipment to measure escapement levels on a daily basis in Upper Cook Inlet's glacial rivers began in 1968 in the Kenai and Kasilof Rivers and was expanded to include the Susitna River in 1978 and the Crescent River in 1979. With the exception of Susitna Station, all sites operated quite successfully in 1984 (Table 3). Unusually low water levels and associated low velocities probably contributed to significant movement of salmon offshore beyond the normal 60 ft operating range of the east-bank counter. Although this segment was compensated for with periodic measurements of onshore-offshore ratios, the overall count is felt to be conservative (King and Tarbox 1985).

Upper Cook Inlet commercial catch statistics refined to gear type, area and date are available from 1966. Comparative analysis of this data for in-season assessment of run strength and timing is generally applied to the other species of salmon but frequently is useful as a source of confirmation of the sockeye salmon data generated by the aforementioned programs. The 1984 commercial catch by gear type and area is summarized in Table 4 while catches

by period and area are contained in Tables 5 through 13. A summary of emergency orders is presented in Table 14. A summary of allowable fishing time by gear and area is presented in Table 15.

The Crescent River sockeye salmon return is managed primarily through the use of comparative catch figures and run-timing modeling as the other programs are not applicable to in-season management of this relatively small and discrete stock. Effort levels are confirmed by aerial survey (Table 16). The stock indentification program has shown that the set gillnet fishery in the Western Subdistrict takes primarily Crescent-bound sockeye salmon and management of this stock consists of adjusting fishing time in this area to achieve proper escapement levels. Fishing began in the Western Subdistrict on 18 June with both catches and effort remaining at average levels until early July. By 10 July, catches and escapement had picked up substantially and the Western Subdistrict was opened to continuous fishing for seventeen days (11-27 July) to harvest surplus sockeye salmon. Despite the continuous fishing time, the Crescent River escapement totaled 118,345, well above the 50,000 fish goal. The Western Subdistrict sockeye salmon harvest of 119,000 is the best catch on record for this area. The successful relocation of the Crescent River sonar counters to a lower river site cut management reaction time by at least five days and proved to be a considerable aid in providing for this record harvest.

The harvest of the remaining sockeye salmon stocks began relatively slowly due to the delayed season opening on the eastside and an attempted strike by the drift gillnet fleet in an effort to secure higher prices for their catch. Drift effort was roughly half of normal levels until 6 July when the strike ended.

By 9 July, the Kasilof River escapement had begun to pick up rapidly and several additional periods were opened for the lower eastside beach at that time. Drift fishing was permitted along the eastside for the first of these periods but poor compliance with boundaries and a significant proportion of non-Kasilof fish in the catches precluded further use of the drift fleet in this manner.

By 13 July, all indications pointed to an overall sockeye salmon return that was fairly normal in run strength and to prevent over-exploitation of Kenai and Susitna stocks, management of the drift fleet became fairly conservative. The drift fishery was restricted to the southern half of the Central District for the regular period on 13 July and again on 16 July. As fish moved rapidly toward the rivers, additional time was permitted on the lower eastside beach starting on Tuesday, 17 July targeted on the Kasilof return, in the Northern District beginning late Tuesday, 17 July targeted on Susitna and Fish Creek sockeye salmon and Wednesday throughout most of Upper Cook Inlet for both set gillnets and drift gear. By Thursday, 18 July, it became apparent that the Kenai River escapement was building far too slowly and the Susitna River escapement was also below the level needed to meet escapement goals. Accordingly, the regular periods on 20 July and 23 July were closed in all areas except the Western and Chinitna Bay Subdistricts.

By the regular period on 27 July, the Susitna River escapement had improved to the point that fishing in the Northern District resumed but the Kenai River

escapement remained well below the 350,000 fish minimum goal. Consequently, the set gillnet fishery in the Upper Subdistrict north of Clam Gulch remained closed as did the drift fishery in the northern half of the Central District. With the sockeye salmon run complete, normal fishing times resumed in all areas beginning with the regular period on 30 July.

The Kenai River sockeye salmon escapement totaled 344,571, slightly below the minimum escapement goal. The Susitna River escapement totaled 194,480, again slightly below the 200,000 fish goal. No formal escapement goal is established for Fish Creek but the 192,352 spawners reaching that system were far in excess of the number needed. The final escapement of 231,685 sockeye salmon into the Kasilof River exceeded the maximum escapement goal of 150,000 by a wide margin. Large returns to the Kasilof River have proven difficult to harvest adequately in the past and the need to restrict the eastside fishery to achieve adequate escapement into the Kenai River further hindered the Kasilof harvest in 1984.

The level of the sockeye salmon harvest in various areas of Upper Cook Inlet was largely dependent on the run strength to productive river systems located in or near those areas. The drift fleet catch of 1.2 million was somewhat above average for this gear group and reflects the overall above-average total return of sockeye salmon. The Northern District setnet catches were the second best on record and reflect the good return to the Susitna River and the tremendous return to Fish Creek. The excellent return to the Kasilof River produced fair catches in the southern portion of the Upper Subdistrict but the northern portion had a relatively poor catch due to weak Kenai River return and the extended closure required to attain adequate escapement.

Chum Salmon

The harvest of 684,124 chum salmon was slightly above the long-term average and provided 11 percent of the exvessel value of the salmon fishery. The chum salmon return overlaps considerably both in time and area with the major sockeye salmon returns. A restrictive fishing policy imposed on the drift fleet, the primary harvester of chum salmon, to assure adequate escapement of sockeye salmon inevitably lowered the chum salmon harvest below the level that would have normally been attained. The chum salmon return, as indicated by catch per unit effort, was well above average. Although no in-season estimate of chum salmon escapement into the Susitna River is generated, the escapement index obtained at sonar sites indicated an excellent number of chum salmon in that drainage.

Returns of local chum salmon stocks to Chinitna Bay is separated to a large degree both temporally and spatially from the chum salmon return to the Susitna River. Chinitna Bay chum salmon begin accumulating in the bay in significant numbers shortly after mid-July, reach peak abundance by early August and begin ascending spawning streams on peak tidal cycles throughout August. Under a Board of Fisheries policy promulgated in 1982, drift gillnetting and seining is prohibited in Chinitna Bay after mid-July until adequate escapement of chum salmon has been attained. Thereafter, the bay is open to all gear types to harvest remaining chum salmon and a significant coho salmon return. Set gillnetting is permitted throughout the chum salmon return unless it appears this harvest will prevent adequate escapement.

Under this Board policy, drift gillnetting was permitted (by emergency order) from the beginning of the season through 16 July. Set gillnetting was open for all regular periods and catches throughout late July indicated a fair chum salmon return was occurring. The Clearwater Creek escapement goal of 10,000 chum salmon was reached on 12 August and drift gillnetting and seining was opened for all regular periods beginning 13 August. The Chinitna Bay chum salmon harvest totaled 19,758 with 78 percent of the catch taken by set gillnets and the remaining 22 percent taken by drift gear. No seine landings were reported.

Pink Salmon

The 1984 harvest of 622,510 pink salmon was 62 percent below the average even-year catch in Upper Cook Inlet and comprised only 3 percent of the exvessel value of the salmon fishery. The major pink salmon returns consist of a run to the Susitna River in late July that is harvested primarily in the drift and Northern District setnet fisheries and a later return to the Kenai River that peaks in early August and is harvested primarily in the Central District eastside setnet fishery.

The restrictions placed on the drift fishery to lower the exploitation rate on the sockeye salmon return provided similar benefits to the weak Susitna pink salmon return which was further aided by several closed periods in the Northern District setnet fishery required by the lagging Susitna sockeye salmon escapement. As a result, the Susitna pink salmon escapement appeared adequate. Catch rates in the eastside setnet fishery in early August also indicated the Kenai return was well below average and the normal practice of allowing substantial additional fishing time on this stock was not possible. Although an escapement estimate of Kenai River pink salmon is not available, visual observations indicated the escapement was probably adequate.

Coho Salmon

The harvest of 442,619 coho salmon was well above the long-term average for this species and contributed 10 percent of the exvessel value of the commercial salmon fishery.

The commercial fishery harvests coho salmon stocks which can be segregated into three broad groups. The first and largest group to appear in Cook Inlet are the fish bound for the Susitna River and other Northern District streams which are taken in the Central District drift fishery and the Northern District setnet fishery in mid to late July. The restrictions placed on both these fisheries in 1984 to protect sockeye salmon stocks substantially lowered their coho salmon interception rate and provided for an excellent abundance of coho salmon throughout the Susitna River basin. The early run of coho salmon bound for the Kenai River first appears along the eastside beach in late July and peaks in early August. The lengthy closure of the eastside setnet fishery in late July due to the poor Kenai River sockeye salmon escapement and fishing only standard periods in August due to a poor Kenai River pink salmon return undoubtedly reduced the commercial interception of Kenai River coho salmon stocks by a substantial margin. The escapement, as indicated by catch rates in the sport fishery, was quite good. The third principle coho salmon stock is present in Cook Inlet from late July through August and bound

primarily for streams along the westside of the Central District. These fish are taken in the setnet fishery in that area and, to a lesser extent, by drift gear moving to the area in August. Catch rates in these fisheries indicated a slightly better than average return of these fish. Nearly all parent streams for these coho salmon are glacially occluded and no estimates of escapement are generated.

Chinook Salmon

The 1984 harvest of 8,819 chinook salmon is equal to the average catch under the present regulatory structure which precludes the harvest of significant numbers of Susitna River chinook salmon. As is normally the case, the bulk of the chinook salmon catch (5,805) occurred in the eastside setnet fishery due to the presence of late-run Kenai River fish in this area. The eastside catch was well below the levels observed in recent years for two reasons: 1) the later season opening dates reduced the catch by approximately 1,000 fish; and 2) the closure of the setnet fishery for several periods after mid-July further reduced the chinook salmon harvest by an estimated 1,000-2,000 fish. Chinook salmon accounted for less than 2 percent of the exvessel value of the commercial fishery.

Management Review and Recommendations

Events of the 1984 salmon fishery yielded valuable insight into the ramifications of various management strategies and served to emphasize the difficulty in developing stock-specific harvest techniques in what remains a predominately mixed-stock, mixed-species fishery.

Crescent River Sockeye Salmon Management:

The successful relocation of the sonar counters in the Crescent River to a site near tidewater proved to be a significant aid in directing management activities. With the travel time from saltwater to the sonar site reduced from an estimated ten days at the previous location to less than one day at the new site, management by escapement became possible. The sockeye salmon entry pattern into the Crescent River is relatively extended and predictable and, when coupled with prompt escapement estimates, permits the manipulation of the commercial fishery based on escapement data alone. Reliance on comparative catch information had proven somewhat unreliable in the past. Questions that remain to be answered about the new site concern its susceptibility to flooding during high water periods (not experienced in 1984) and the need for species apportionment during the latter part of the sockeye salmon run.

Kasilof River Sockeye Salmon Management:

This past season marked the fifth consecutive year that the sockeye salmon escapement goal of 150,000 fish has been exceeded (Appendix Table 12). Smolt outmigration estimates generated through the F.R.E.D. Division evaluation of the Crooked Creek Hatchery indicate substantial further growth in the size of the return will occur. The inability to adequately harvest the return in past years has been due to a variety of factors including inclement weather, an

unacceptably high component of Kenai-bound fish in the catches, abnormally early run-timing and simple ineffectiveness of gear apparently due to fish entering the river directly from offshore and bypassing the set nets. With the likelihood of continued strong returns to this system, full utilization of surpluses will require some version of a fishery located directly in the terminus of the river.

Kenai River Versus Susitna River Sockeye Salmon Management:

It would appear at this time that the hopes of developing some degree of stock-specific harvest through area restrictions on the drift fishery will not be realized. Run-timing differences between Susitna-bound sockeye salmon and Kenai-bound sockeye salmon do not appear consistent or predictable to the degree that would allow for implementing a successful strategy. Area drift restrictions have proven effective, however, in limiting the exploitation rate of the drift fleet when some level of harvest short of that expected with a standard period is desired.

This strategy is not without cost, however, as calibration data for the offshore testfish projection of total run size is compromised during restricted periods although not to the same degree experienced during a complete closure of the fishery. Some risk in inadvertently targeting effort on a particular stock due to unrecognized run-timing differential is also involved. The continued use of this tactic will require further experimentation and evaluation.

Salmon Prices and Quality

The price paid per pound to fishermen for commercially harvested salmon in 1984 was generally higher than the previous year (Appendix Table 13). Sockeye salmon prices were substantially higher, rising from $.74 per pound to $1.00, and helped to offset the effect of the smaller catch. Chinook salmon brought $1.08 per pound followed by coho salmon ($.64), chum salmon ($.39) and pink salmon ($.21).

Fish quality appeared excellent in 1984 with the substantially smaller harvest handled promptly by processors. The large harvest of the two previous years served to add additional ice-making and processing equipment as well as establish procedures for tendering fish to other areas. A total of 38 firms or individuals purchased salmon in 1984 (Table 17).

Minor System Escapement

Escapement of salmon into several other contributing systems in Upper Cook Inlet were monitored in 1984 and merit some discussion. The Department's F.R.E.D. Division, with funding provided by the Commercial Fisheries Division, continued the annual enumeration of sockeye salmon and coho salmon into Fish Creek located on Knik Arm. The 1984 sockeye salmon escapement through the weir, which was in place from 29 June through 19 September, totaled 192,352, the highest experienced in this system since 1940. Both the highest daily escapement (27,397) and the 50 percent point of the run were observed on 25 July (Table 18). The coho salmon count of 4,510 included 1,630 fish

downstream of the weir at the time of its removal. The Cook Inlet Aquaculture Association continued operation of a weir on Packers Creek on Kalgin Island. A total of 30,864 sockeye salmon passed through the weir which was in place from 15 May to 4 September. The peak daily count (2,711) occurred on 20 August, one day after the 50 percent point of the count (Table 19).

1985 Outlook

The projected sockeye salmon harvest for Upper Cook Inlet in 1985 is 3.7 million. This is the second year of the formal forecast methodology utilizing historical recruit/spawner relationships and average marine maturity schedules. The 1984 overall forecast proved quite accurate (2.2 million forecast, 2.4 million harvest) although individual forecasts by river system varied from observed returns. Sockeye salmon returns to all river systems should be excellent in 1985 with the Kasilof River return expected to be particularly strong.

Little data is available on which to base similar forecasts for the remaining salmon species. Based mainly on fragmentary escapement indices and parent year run strength, the chum salmon harvest is expected to be below average, coho salmon above average, and chinook salmon above average. The pink salmon return should be very weak, typical of odd-year run-strength.

SUBSISTENCE AND PERSONAL USE FISHERIES

The Commercial Fisheries Division monitors all subsistence and personal use fisheries conducted in marine waters. The only subsistence salmon fishery under current regulations for Upper Cook Inlet is in the Tyonek area while two personal use gillnet salmon fisheries are conducted on the eastside; the Kasilof area sockeye salmon fishery and the fall coho salmon fishery.

Tyonek

The Tyonek subsistence fishery is open only to residents of the village and consists of three 16-hour periods per week from 15 May to 15 June and one 12-hour period per week for the remainder of the summer. The period scheduling makes this predominantly a chinook salmon fishery for which a 4,200 fish quota exists. Gear is limited to single 10-fathom gillnets having a mesh size no greater than six inches. The fishery is monitored on-site through 30 June to assure that the chinook salmon quota is not exceeded.

The 1984 chinook salmon harvest of 2,364 was the second highest catch recorded in the five years this fishery has been monitored (Appendix Table 16). A catch of 310 sockeye salmon, 66 coho salmon, 23 chum salmon and six pink salmon was also reported (Table 20). Permits were issued to 71 villagers, down slightly from 1983 (Browning 1985A).

Kasilof Sockeye Salmon Personal Use

This past season marked the third year for this popular gillnet fishery that takes place in waters closed to commercial fishing surrounding the mouth of

the Kasilof River. The fishery is open to all Alaska residents holding a sport fishing license although only one permit may be issued per household. A permit holder may take 25 salmon plus an additional 10 salmon for each additional member of his household. Gear is limited to a single 10-fathom gillnet having a mesh size no greater than six inches. Nets must be fished at least 100 feet apart and must be attended by permit-holders. A quota of 5,000 to 10,000 salmon is applied to the fishery which, by virtue of time and location, harvest predominately Kasilof River sockeye salmon. The fishery opens on 21 June and continues each day until the quota is reached. Daily fishing periods are from 6:00 A.M. until 6:00 P.M. Estimates of catch are provided by on-site Department personnel and confirmed by post-season permit returns.

A total of 703 permits were issued in 1984, a 2 percent increase from 1983. The fishery was open for eight days, closing by emergency order on 28 June following the harvest of 12,926 sockeye salmon and 165 chinook salmon (Table 21). The beach was fully saturated with nets throughout most of the fishery but relatively few complaints were voiced as participants seem to be getting accustomed to the crowded conditions (Browning 1985B).

Fall Coho Salmon Personal Use

Created by the Board of Fisheries in the spring of 1983, this gillnet fishery extends from the Kasilof River northward to Point Possession along all eastside beaches open to commercial set netting. Gear and bag limits are identical to the Kasilof fishery although participants in both fisheries may not exceed a combined catch of 25 salmon plus 10 for each additional member of the household. Under current regulations, the fishery is open on the last three weekends of September or until the quota of 2,500 salmon is attained, whichever occurs first. Weekly fishing periods are from noon Saturday until noon Sunday. Harvest monitoring is accomplished by aerial survey to determine effort and a mandatory call-in of catches. Permits were issued to 312 Alaska residents in 1984, an increase of 6 percent from 1983. The fishery remained open through all three weekends with the total catch estimated at 2,261 coho salmon, two sockeye salmon, seven chum salmon, 10 pink salmon, one chinook salmon and four steelhead trout.

1984 COMMERCIAL HERRING FISHERY

The 1984 Upper Cook Inlet herring fishery opened by regulation on 15 April. As in the past, the first area to receive any appreciable effort was Tuxedni Bay. Several boats were on the grounds at the time of the opening but catches did not become significant until 24 April. An informal guideline harvest level for an initial opening in Tuxedni Bay was set at 100 tons. By 27 April, the catch had exceeded 60 tons and an emergency order closed the area effective at 2:00 P.M., 28 April. The final catch from this first opening totaled 99 tons. Roe maturity was relatively poor from initial catches but improved to 9 percent to 10 percent during the time period when the bulk of the harvest occurred.

With the closure of Tuxedni Bay, effort quickly shifted to Chinitna Bay. Fishing was very slow initially, but both catches and roe maturity increased substantially on 1 May. With the reported harvest approaching the regulatory guideline harvest level of 35 tons by noon on 2 May, the bay was closed by emergency order at 6:00 P.M. that evening. The final catch totaled 89 tons. The mature roe content averaged approximately 10 percent.

The concept of reopening Tuxedni Bay for a second fishery in late May is predicated on the theory that stocks experiencing exploitation during the initial fishery would have departed the bay and any fish present in late May would have suffered no prior fishing mortality. First attempted in 1983, the second opening did indicate the presence of younger age classes of herring than observed during the initial opening. In 1984, the bay was reopened on 17 May. Fishing effort was rather limited due to an impending commercial halibut fishing period. Herring were fairly abundant in the bay by 20 May but with limited effort, daily harvests remained small. With the age composition of the harvest consisting primarily of Age IV and Age V fish, the fishery was closed on 25 May after the harvest of approximately 65 tons. Mature roe content averaged 12 percent.

The bait herring fishery along the eastside of the inlet had a similar amount of effort as observed in recent years (a peak net count of 40). Significant catches did not occur until late April. Effort was concentrated in the vicinity of Clam Gulch and near Nikiski. Both catch and effort peaked during mid-May and declining catches combined with increasing incidental salmon catches led to a closure of the fishery on May 31. The total harvest was estimated at 118 tons.

The combined harvest of bait and roe herring totaled 343 tons, the second highest catch on record.

All fisheries showed an increased percentage of younger (Age IV and V) over prior years (Tables 22-25). Herring abundance appeared somewhat improved over past years, apparently due to these strong year-classes entering the fishery.

1984 COMMERCIAL RAZOR CLAM FISHERY

A total of 261,742 pounds of razor clams were harvested from Upper Cook Inlet waters in 1984, a slight decline from the previous year. Nearly all of the harvest was directed to the human consumption market and came from the Crescent River Bar area.

Virtually all of the harvest came from a single hand-digging operation with a minor quantity harvested by dredge. Experimental permits were issued to six prospective dredge operators with two advancing to the stage of participating in the commercial harvest. Digging began in late March and continued into November. Approximately thirty hand-diggers were active at the peak of the harvest in August.

Although no biological parameters were defined from the 1984 harvest, abundance appeared relatively unchanged from prior years. Upper Cook Inlet razor clam stocks are considered stable and capable of withstanding a substantially higher yearly harvest.

All samples of water and clam tissue needed to maintain certification of the area for human consumption harvest were obtained by personnel from the Alaska Department of Environmental Conservation. Laboratory analysis revealed no paralytic shellfish poisoning toxins in excess of allowable limits. A 1984 tide schedule is presented in Table 26.

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Table 1. Commercial salmon harvest projection and subsequent harvest by species, Upper Cook Inlet, 1984.

Species	Pre-season Harvest Projection	Actual Harvest[1]
Sockeye	2,200,000[2]	2,102,767
Chum	350,000	684,124
Pink	1,700,000	622,510
Coho	250,000	442,619
Chinook	14,000	8,819

[1] Preliminary data.
[2] Formal forecast.

Table 2. 1984 Upper Cook Inlet sockeye salmon age 1.3 in-season run composition estimates.

Model: 1984 1.3 Susitna River N = 118 7/09-7/17
1984 1.3 Kenai River N = 148 7/06-7/18
1984 1.3 Kasilof River N = 148 7/01-7/18

Fishery	Date	Susitna	Kenai	Kasilof
Drift	6/25	.35(+.21)	.20(+.17)	.45(+.15)
Drift	6/29	.38(+.30)	.40(+.25)	.22(+.18)
Drift	7/02	.41(+.30)	.30(+.24)	.29(+.19)
Drift	7/06	.63(+.33)	.14(+.25)	.23(+.20)
Drift	7/09	.51(+.31)	.28(+.25)	.21(+.19)
Drift	7/10	.47(+.31)	.42(+.26)	.11(+.17)
Drift	7/13	.59(+.18)	.41(+.18)	0
Drift	7/16	.39(+.25)	.59(+.23)	.02(+.15)
Drift	7/18	.49(+.27)	.50(+.22)	.01(+.17)
Cohoe/Ninilchik	7/02	.07(+.26)	.26(+.21)	.67(+.21)
Cohoe/Ninilchik	7/06	.11(+.26)	.21(+.20)	.68(+.21)
Kalifonsky	7/09	.20(+.28)	.38(+.23)	.42(+.20)
Cohoe/Ninilchik	7/10	.44(+.30)	.24(+.24)	.32(+.20)
Cohoe/Ninilchik	7/11	.56(+.32)	.30(+.26)	.14(+.19)
Cohoe/Ninilchik	7/17	.26(+.24)	.62(+.21)	.12(+.18)
North Dist East	7/18	1.00(+.17)	0(+.17)	Not in model

Data Source: Cross (pers. comm.).

Table 3. Daily side scan sonar escapement estimates for sockeye salmon in the Kenai, Kasilof, Susitna and Crescent rivers, 1984.

Date	Kenai		Kasilof		Susitna		Crescent	
	Daily	Accum	Daily	Accum	Daily	Accum	Daily	Accum
6/10			284	284				
6/11			342	626				
6/12			359	985				
6/13			279	1,264				
6/14			319	1,583				
6/15			453	2,036			52	52
6/16			649	2,685			67	119
6/17			415	3,100			127	246
6/18			434	3,534			104	350
6/19			728	4,262			53	403
6/20			1,411	5,673			136	539
6/21			1,819	7,492			353	892
6/22	979	979	2,124	9,616			486	1,378
6/23	1,298	2,277	2,322	11,938			619	1,997
6/24	1,004	3,281	2,552	14,490			417	2,414
6/25	701	3,982	1,248	15,738			440	2,854
6/26	610	4,592	1,369	17,107			362	3,216
6/27	742	5,334	1,951	19,058			1,023	4,239
6/28	656	5,990	2,423	21,481			566	4,805
6/29	326	6,316	2,743	24,224			956	5,761
6/30	863	7,179	2,630	26,854	82	82	2,375	8,136
7/01	634	7,813	3,135	29,989	235	317	1,442	9,578
7/02	448	8,261	3,151	33,140	222	539	2,289	11,867
7/03	420	8,681	1,666	34,806	229	768	2,156	14,023
7/04	550	9,231	4,786	39,592	213	981	2,512	16,535
7/05	649	9,880	9,077	48,669	148	1,129	1,942	18,477
7/06	655	10,535	6,076	54,745	183	1,312	1,687	20,164
7/07	614	11,149	4,581	59,326	122	1,434	1,611	21,775
7/08	1,243	12,392	9,481	68,807	232	1,666	4,796	26,571
7/09	2,676	15,068	12,505	81,312	915	2,581	5,145	31,716
7/10	3,711	18,779	7,820	89,132	729	3,310	6,333	38,049
7/11	2,804	21,583	4,525	93,657	373	3,683	4,562	42,611
7/12	1,640	23,223	1,120	94,777	411	4,094	3,174	45,785
7/13	1,382	24,605	2,562	97,339	573	4,667	2,588	48,373
7/14	680	25,285	4,214	101,553	486	5,153	1,874	50,247
7/15	920	26,205	9,103	110,656	1,050	6,203	3,518	53,765
7/16	12,224	38,429	13,602	124,258	19,203	25,406	5,314	59,079
7/17	21,163	59,592	10,976	135,234	20,593	45,999	5,820	64,899
7/18	46,225	105,817	10,667	145,901	22,130	68,129	6,044	70,943
7/19	19,100	124,917	13,037	158,938	24,371	92,500	4,699	75,642

-Continued-

Table 3, continued. Daily side scan sonar escapement estimates for sockeye salmon in the Kenai, Kasilof, Susitna and Crescent Rivers, 1984.

Date	Kenai		Ksailof		Susitna		Crescent	
	Daily	Accum	Daily	Accum	Daily	Accum	Daily	Accum
7/20	14,885	139,802	10,800	169,738	18,005	110,505	5,342	80,984
7/21	20,228	160,030	9,082	178,820	12,244	122,749	4,378	85,362
7/22	31,224	191,254	7,372	186,192	10,222	132,971	2,530	87,892
7/23	33,478	224,732	5,022	191,214	12,916	145,887	4,735	92,627
7/24	23,482	248,214	7,408	198,622	6,021	151,908	2,336	94,963
7/25	20,925	269,139	5,585	204,207	4,295	156,203	1,261	96,224
7/26	18,006	287,145	4,979	209,186	4,975	161,178	1,320	97,544
7/27	11,724	298,869	1,931	211,117	3,289	164,467	1,587	99,131
7/28	10,360	309,229	1,915	213,032	2,959	167,426	1,720	100,851
7/29	5,375	314,604	1,640	214,672	2,188	169,614	2,088	102,939
7/30	2,799	317,403	1,414	216,086	3,267	172,881	1,416	104,355
7/31	2,336	319,739	902	216,988	2,323	175,204	1,336	105,691
8/01	1,634	321,373			1,909	177,113		
8/02	1,575	322,948			1,748	178,861		
8/03	2,072	325,020			2,058	180,919		
8/04	1,610	326,630			1,321	182,240		
8/05	2,736	329,366			1,537	183,777		
8/06	1,587	330,953			998	184,775		
8/07	894	331,847			1,138	185,913		
8/08	2,067	333,914			900	186,813		
Total		344,571[2]		231,685[3]		194,480[4]		118,345[5]

[1] Combined daily counts from Yentna River sonar with Susitna River east bank sonar with Yentna count advanced one day to account for travel time from Susitna Station.
[2] Includes 10,657 fish estimated to have entered river after 8/8.
[3] Includes 1,536 fish estimated prior to 6/10 and 13,161 fish estimated after 7/31.
[4] Includes 7,667 fish counted at Yentna site from 8/10-9/5.
[5] Includes 12,654 fish estimated after 7/31.

Data Source: King et al. (1985).

Table 4. Commercial salmon catch by area and gear type, Upper Cook Inlet, 1984.[1]

Area/Gear	Chinook	Sockeye	Coho	Pink	Chum	Total
DRIFT	509	1,228,600	208,450	279,820	567,452	2,284,831
CENTRAL SET						
Upper	5,805	495,788	36,530	222,026	4,219	764,368
Kalgin Is.	436	35,111	35,457	10,801	5,529	87,334
Kustatan	231	11,057	6,091	1,710	1,517	20,606
Western	935	119,001	39,063	3,776	14,068	176,843
Chinitna Bay	18	2,263	6,810	436	15,493	25,020
Subtotal	7,425	663,220	123,951	238,749	40,826	1,074,171
NORTHERN SET						
Eastern	101	74,351	23,405	20,829	8,792	127,478
General	784	136,596	86,813	83,112	67,054	374,359
Subtotal	885	210,947	110,218	103,941	75,846	501,837
SEINE	0	0	0	0	0	0
GRAND TOTAL	8,819	2,102,767	442,619	622,510	684,124	3,860,839

[1] Preliminary data.

Table 5. Commercial salmon harvest by period and species for drift gill nets in the Central District, 1984.

Date	Number of Deliveries	Chinook	Sockeye	Coho	Pink	Chum
6/25	224	42	16,121	397	30	2,392
6/29	159	19	23,617	1,520	27	5,427
7/02	209	75	52,317	3,680	106	11,370
7/06	545	80	212,869	11,717	1,119	63,390
7/09	562	46	206,215	17,847	3,223	53,566
7/10	330	33	62,917	2,319	231	3,945
7/13	567	34	253,226	32,184	18,297	62,751
7/16	559	64	251,748	32,403	43,453	39,905
7/18	572	40	114,083	29,120	86,150	54,564
7/27	520	16	14,796	14,293	26,035	26,890
7/30	516	34	12,062	12,834	35,019	46,015
8/03	477	12	4,608	11,815	34,513	57,887
8/06	415	5	2,906	8,158	18,874	33,947
8/10	286	2	607	10,255	7,283	66,180
8/13	275	5	284	8,361	5,021	35,650
8/17	58	0	48	3,844	277	1,147
8/20	45	2	116	4,074	144	2,008
8/24	17	0	17	906	14	147
8/27	5	0	1	417	0	88
8/31	15	0	10	758	3	153
9/03	8	0	4	380	0	21
9/07	12	0	8	749	1	8
9/10	7	0	14	266	0	1
9/14	1	0	0	21	0	0
9/17	3	0	1	106	0	0
9/21	1	0	5	21	0	0
9/24	1	0	0	5	0	0
Total		509	1,228,600	208,450	279,820	567,452

Table 6. Commercial salmon harvest by period and species for set gill nets in the Upper Subdistrict, 1984.

Date	Number of Deliveries	Chinook	Sockeye	Coho	Pink	Chum
6/25	2	1	55	0	0	0
6/29	2	0	117	0	0	0
7/02	108	281	13,300	44	19	1
7/06	128	708	15,230	47	28	54
7/09	218	629	57,525	373	236	43
7/10	182	247	32,840	555	160	606
7/11	127	165	12,173	89	173	4
7/12	169	355	15,112	74	337	3
7/13	127	265	10,488	64	235	1
7/16	363	773	96,659	1,048	1,518	30
7/17	187	421	70,557	805	1,806	37
7/18	335	703	135,303	4,752	8,289	354
7/27	63	68	4,773	2,158	9,434	80
7/30	225	595	16,408	7,115	48,178	901
8/03	223	302	8,447	7,490	58,277	1,573
8/06	186	157	4,212	5,377	31,958	367
8/10	166	86	1,867	3,454	40,811	127
8/13	142	49	722	3,085	20,567	38
Total		5,805	495,788	36,530	222,026	4,219

Table 7. Commercial salmon harvest by period and species for set gill nets in the Kalgin Island Subdistrict, 1984.

Date	Number of Deliveries	Chinook	Sockeye	Coho	Pink	Chum
6/25	18	123	1,901	64	1	1
6/29	21	88	1,462	262	4	12
7/02	18	51	1,741	701	31	37
7/06	19	40	1,449	740	23	35
7/09	22	36	3,037	720	68	83
7/13	19	40	3,820	959	413	109
7/16	16	12	4,583	2,225	309	691
7/18	20	3	2,661	1,455	142	44
7/22	4	0	379	110	74	33
7/27	22	6	4,014	3,702	1,101	859
7/30	21	6	2,339	1,630	1,132	178
8/03	22	2	1,973	3,572	1,297	716
8/06	23	5	1,853	3,486	989	296
8/10	22	11	1,685	4,891	2,277	1,143
8/13	22	12	702	4,022	2,660	916
8/17	16	0	406	891	115	61
8/20	19	0	456	2,123	111	247
8/24	13	1	248	619	39	39
8/27	6	0	105	107	2	2
8/31	9	0	150	610	8	13
9/03	7	0	47	954	3	7
9/07	6	0	50	746	0	5
9/10	6	0	37	548	0	1
9/17	5	0	13	235	2	1
9/21	3	0	0	85	0	0
Total		436	35,111	35,457	10,801	5,529

Table 8. Commercial salmon harvest by period and species for set gill nets in the Kustatan Subdistrict, 1984.

Date	Number of Deliveries	Chinook	Sockeye	Coho	Pink	Chum
6/25	5	110	259	3	0	7
6/29	7	66	335	44	1	85
7/02	3	18	151	36	0	115
7/06	8	13	1,885	154	10	443
7/09	8	20	749	172	27	64
7/13	1	0	42	13	6	0
7/16	5	0	2,905	437	115	121
7/17	1	0	512	66	14	9
7/18	9	0	2,908	1,473	145	36
7/27	5	1	625	769	361	22
7/30	5	0	122	307	141	51
8/03	8	1	358	1,209	400	305
8/06	6	1	150	765	276	143
8/10	8	0	29	124	127	21
8/13	5	1	15	68	64	12
8/17	3	0	4	272	6	30
8/20	4	0	6	140	15	40
8/24	3	0	2	39	2	13
Total		231	11,057	6,091	1,710	1,517

Table 9. Commercial salmon harvest by period and species for set gill nets in the Western Subdistrict, 1984.

Date	Number of Deliveries	Chinook	Sockeye	Coho	Pink	Chum
6/18	29	370	1,043	2	0	1
6/22	25	131	2,200	8	3	1
6/25	14	30	2,372	7	3	3
6/29	29	69	2,630	105	14	12
7/02	33	60	3,855	313	16	23
7/06	31	57	4,844	429	21	93
7/09	34	6	6,253	350	20	48
7/11	26	10	4,039	316	22	58
7/12	31	28	5,992	685	50	129
7/13	41	31	8,171	991	90	229
7/14	11	3	1,985	367	38	63
7/15	25	20	5,537	805	91	179
7/16	30	13	6,451	915	169	374
7/17	20	4	6,051	1,028	126	174
7/18	31	11	9,900	1,657	134	395
7/19	19	6	4,955	529	61	314
7/20	32	10	8,231	1,151	238	594
7/21	14	5	2,630	773	121	212
7/22	38	10	6,722	1,789	54	618
7/23	32	12	4,350	1,132	57	529
//24	33	9	4,942	1,544	218	1,125
7/25	28	2	2,470	1,169	141	831
7/26	33	12	3,091	1,222	118	819
7/27	42	6	4,082	2,685	125	984
7/30	24	5	1,823	1,358	113	714
8/03	31	3	1,660	2,160	401	1,099
8/06	32	2	1,065	3,187	475	1,632
8/10	26	4	633	2,648	225	989
8/13	26	4	502	2,061	439	891
8/17	21	1	306	2,535	79	509
8/20	23	1	44	1,949	56	265
8/24	17	0	16	740	25	108
8/27	14	0	59	764	13	35
8/31	8	0	94	692	13	5
9/03	4	0	3	454	4	8
9/07	4	0	0	307	2	4
9/10	3	0	0	168	1	1
9/17	2	0	0	58	0	0
9/21	1	0	0	10	0	0
Total		935	119,001	39,063	3,776	14,068

Table 10. Commercial salmon harvest by period and species for set gill nets in the Chinitna Bay Subdistrict, 1984.

Date	Number of Deliveries	Chinook	Sockeye	Coho	Pink	Chum
6/25	1	0	82	0	0	3
6/29	3	2	277	1	5	18
7/02	3	4	578	27	6	211
7/06	5	6	306	33	12	353
7/09	5	1	516	25	20	418
7/13	4	1	166	15	27	986
7/16	4	1	108	26	31	851
7/20	3	0	70	76	37	696
7/23	3	0	72	69	39	761
7/27	3	0	33	110	23	894
7/30	4	2	21	170	25	1,933
8/03	3	0	12	242	55	1,404
8/06	3	0	6	193	47	1,575
8/10	3	1	5	322	27	1,392
8/13	3	0	3	336	23	890
8/17	3	0	0	291	22	837
8/20	13	0	5	1,592	24	1,035
8/24	13	0	2	2,602	12	928
8/27	7	0	1	460	0	285
8/31	1	0	0	139	1	18
9/03	1	0	0	58	0	3
9/07	1	0	0	23	0	2
Total		18	2,263	6,810	436	15,493

Table 11. Commercial salmon harvest by period and species for drift gill nets in the Chinitna Bay Subdistrict, 1984.

Date	Number of Deliveries	Chinook	Sockeye	Coho	Pink	Chum
6/25	1	2	179	2	0	26
6/29	1	0	0	0	0	25
7/02	1	0	56	0	0	0
8/10	6	1	43	666	40	294
8/13	27	1	34	3,875	92	1,268
8/17	19	0	7	2,570	41	677
8/20	18	0	13	3,161	24	1,596
8/24	12	0	8	707	11	111
8/27	5	0	1	417	0	88
8/31	12	0	0	703	3	152
9/03	6	0	0	310	0	21
9/07	10	0	7	673	1	7
9/10	2	0	0	136	0	0
Total		4	348	13,220	212	4,265

Table 12. Commercial salmon harvest by period and species for set gill nets in the General Subdistrict (Northern District), 1984.

Date	Number of Deliveries	Chinook	Sockeye	Coho	Pink	Chum
6/25	17	194	123	3	0	0
6/29	26	110	340	43	2	0
7/02	44	180	468	114	2	42
7/06	55	61	712	319	13	12
7/09	78	97	3,606	543	110	539
7/13	71	31	1,736	268	102	150
7/16	125	23	38,812	6,207	1,481	8,713
7/18	124	20	50,575	28,361	8,078	10,821
7/19	80	15	16,721	13,565	4,416	6,160
7/20	6	2	865	294	330	668
7/27	132	21	13,186	13,218	33,710	7,901
7/30	131	17	4,951	11,658	18,110	12,545
8/03	114	8	3,209	5,352	11,500	7,908
8/06	79	4	884	4,292	4,382	10,267
8/10	46	1	350	821	602	247
8/13	13	0	26	324	153	68
8/17	16	0	27	818	87	856
8/20	10	0	1	433	27	54
8/24	5	0	2	69	5	19
8/27	6	0	1	62	0	16
8/31	1	0	0	0	0	55
9/03	5	0	1	49	2	13
Total		784	136,596	86,813	83,112	67,054

Table 13. Commercial salmon harvest by period and species for set gill nets in the Eastern Subdistrict (Northern District), 1984.

Date	Number of Deliveries	Chinook	Sockeye	Coho	Pink	Chum
6/25	20	15	279	1	0	0
6/29	24	41	1,533	28	4	0
7/02	28	26	1,125	27	4	0
7/06	29	8	1,922	113	14	0
7/09	27	1	2,098	60	48	13
7/13	29	1	915	39	37	2
7/16	36	1	5,760	60	136	16
7/18	78	2	36,240	3,212	3,442	910
7/19	34	2	8,702	1,304	2,029	202
7/20	7	0	797	251	296	72
7/27	39	0	6,017	4,476	5,927	4,105
7/30	33	0	1,679	1,938	1,924	1,771
7/31	13	0	2,365	998	854	243
8/03	36	0	2,252	2,159	2,503	1,020
8/06	32	1	1,262	2,117	2,681	255
8/10	17	0	712	710	206	10
8/13	15	1	204	214	107	6
8/17	14	2	161	1,450	301	31
8/20	16	0	236	1,846	240	96
8/24	9	0	70	1,244	65	25
8/27	2	0	4	138	4	2
8/31	5	0	3	160	4	5
9/03	5	0	11	282	3	3
9/07	6	0	2	209	0	3
9/10	6	0	2	210	0	1
9/14	1	0	0	58	0	0
9/17	5	0	0	92	0	0
9/21	1	0	0	9	0	1
Total		101	74,351	23,405	20,829	8,792

Table 14. Emergency order summary, Upper Cook Inlet commercial salmon fishery, 1984.

Base fishing time = 6:00 A.M. to 6:00 P.M. on Mondays and Fridays.
For districts and subdistricts, refer to map (Figure 1).

Emergency Order Number	Effective Date	Description	Reason
2S-05-84	June 25	Opened Chinitna Bay Subdistrict to drift gillnetting and seining on regular periods from June 25 to July 16.	Permit limited drifting and seining prior to the arrival of local chum stocks in mid-July.
2S-06-84	July 10	Opened set gillnetting in the Upper Subdistrict south of a marker four miles north of the Kasilof River and drift gillnetting east of a line from East Foreland to Cape Ninilchik and south of Cape Kasilof from 6:00 A.M. until 6:00 P.M.	Sockeye escapement in the Kasilof River was building too rapidly.
2S-07-84	July 11	Opened set gillnetting in the Upper Subdistrict south of a marker four miles north of the Kasilof River from 6:00 A.M. until 6:00 P.M. Opened set gillnetting in the Western Subdistrict until further notice beginning at 6:00 A.M.	Continued high rate of escapement in the Kasilof River and Crescent River.
2S-08-84	July 11	Extended set gillnetting in the Upper Subdistrict south of a marker four miles north of the Kasilof River from 6:00 P.M. July 11 until 6:00 P.M. July 12.	Continued high rate of escapement in the Kasilof River.
2S-09-84	July 13	Restricted drift gillnetting to that portion of the Central District south of a line from Clam Gulch Tower to the southern tip of Kalgin Island to Harriet Point.	Reduce the exploitation of Susitna and Kenai River sockeyes.

Continued

Table 14, continued. Emergency order summary, Upper Cook Inlet commercial salmon fishery, 1984.

Emergency Order Number	Effective Date	Description	Reason
2S-10-84	July 16	Same as 2S-09-84.	Same as 2S-09-84.
2S-11-84	July 16	Opened set gillnetting in the Upper Subdistrict south of a marker four miles north of the Kasilof River from 6:00 P.M. July 16 until 6:00 P.M. July 17.	Continued high rate of escapement of sockeye salmon into the Kasilof River.
2S-12-84	July 17	Opened drift gillnetting in all areas except Chinitna Bay on July 18 from 6:00 A.M. to 6:00 P.M. Opened set gillnetting in the Northern District and the Upper Subdistrict south of a marker four miles north of the Kasilof River from 6:00 P.M. July 17 until 6:00 P.M. July 18. Opened set gillnetting in all other areas except Chinitna Bay on July 18 from 6:00 A.M. until 6:00 P.M.	Rapid movement of presumed surpluses of Susitna and Kenai sockeyes and continued high rates of escapement of Kasilof and Crescent sockeyes.
2S-13-84	July 19	Opened set gillnetting in the Northern District on July 19 from 6:00 A.M. to 6:00 P.M.	Presumed surplus of Susitna sockeyes moving rapidly through the Northern District.
2S-14-84	July 20	Closed drift gillnetting in all areas and set gillnetting in all areas except the Western and Chinitna Bay Subdistricts on July 20.	Inadequate sockeye escapement rates in the Kenai and Susitna Rivers.
2S-15-84	July 23	Closed drift gillnetting in all areas and set gillnetting in all areas except the Western and Chinitna Bay Subdistricts on July 23.	Inadequate sockeye escapement rates in the Kenai and Susitna Rivers.

Continued

Table 14, continued. Emergency order summary, Upper Cook Inlet commercial salmon fishery, 1984.

Emergency Order Number	Effective Date	Description	Reason
2S-16-84	July 27	Closed drift gillnetting north of a line from Clam Gulch Tower to the southern end of Kalgin Island to Harriet Point and closed set gillnetting in the Upper Subdistrict north of the Clam Gulch Access Road on July 27.	Inadequate sockeye escapement rates in the Kenai River.
2S-17-84	August 13	Opened drift gillnetting and seining in the Chinitna Bay Subdistrict on all subsequent regular periods.	Escapement goal for chum salmon achieved.
2S-18-84	August 20	Changed the starting and ending times of drift gillnet periods to 7:00 A.M. until 7:00 P.M.	Aid in enforcing opening times and provide for a more comparable data base.

Table 15. Commercial salmon fishing periods by area and gear type, Upper Cook Inlet, 1984.

Date	Day	Hours	Set	Drift
6/18	M	0600 - 1800	Western only	
6/22	F	0600 - 1800	Western only	
6/25	M	0600 - 1800	All except Upper Subdistrict	All except within 2 miles of eastside
6/29	F	0600 - 1800	All except Upper Subdistrict	All except within 2 miles of eastside
7/02	M	0600 - 1800	All except northern portion of Upper Subdistrict	All except within 2 miles of northern portion of Upper Subdistrict
7/06	F	0600 - 1800	All except northern portion of Upper Subdistrict	All except within 2 miles of northern portion of Upper Subdistrict
7/09	M	0600 - 1800	All areas	All areas
7/10	Tu	0600 - 1800	Upper south of K-Beach marker	East of E. Foreland to C. Ninilchik and south of C. Kasilof
7/11	W	0600 - 1800	Upper south of K-Beach marker Western	
7/11	W	1800 - 2400	Upper south of K-Beach marker Western	
7/12	Th	0000 - 1800	Upper south of K-Beach marker Western	
		0800 - 2400	Western	
7/13	F	0000 - 0600	Western	
		0600 - 1800	All	South of Clam Gulch to south end of Kalgin Island to Harriet Point
		1800 - 2400	Western	

Continued

Table 15, continued. Commercial salmon fishing periods by area and gear type, Upper Cook Inlet, 1984.

Date	Day	Hours	Set	Drift
7/14	Sa	0000 - 2400	Western	
7/15	Su	0000 - 2400	Western	
7/16	M	0000 - 0600	Western	
		0600 - 1800	All	South of Clam Gulch Tower to South Kalgin
		1800 - 2400	Upper south of K-Beach marker Western	
7/17	Tu	0000 - 1800	Upper south of K-Beach marker Western	
		1800 - 2400	Upper south of K-Beach marker Western, Northern	
7/18	W	0000 - 0600	Upper south of K-Beach marker Western, Northern	
		0600 - 1800	All except Chinitna Bay	All except Chinitna Bay
		1800 - 2400	Western	
7/19	Th	0000 - 0600	Western	
		0600 - 1800	Western, Northern	
		1800 - 2400	Western	
7/20	F	0000 - 0600	Western	
		0600 - 1800	Western, Chinitna Bay	
		1800 - 2400	Western	

Continued

Table 15, continued. Commercial salmon fishing periods by area and gear type, Upper Cook Inlet, 1984.

Date	Day	Hours	Set	Drift
7/21	Sa	0000 - 2400	Western	
7/22	Su	0000 - 2400	Western	
7/23	M	0000 - 0600	Western	
		0600 - 1800	Western, Chinitna Bay	
		1800 - 2400	Western	
7/24	T	0000 - 2400	Western	
7/25	W	0000 - 2400	Western	
7/26	Th	0000 - 2400	Western	
7/27	F	0000 - 0600	Western	
		0600 - 1800	All except Upper north of Clam Gulch	South of Clam Gulch to south Kalgin but not including Chinitna Bay
		1800 - 2400	Western	
7/30	M	0600 - 1800	All	All except Chinitna Bay
8/03	F	0600 - 1800	All	All except Chinitna Bay
8/06	M	0600 - 1800	All	All except Chinitna Bay
8/10	F	0600 - 1800	All	All except Chinitna Bay
8/13	M	0600 - 1800	All	All
8/17	F	0600 - 1800	All except Upper	All

Continued

Table 15, continued. Commercial salmon fishing periods by area and gear type, Upper Cook Inlet, 1984.

Date	Day	Hours	Set	Drift
8/20	M	0600 - 1800 Set 0700 - 1900 Drift	All except Upper	All
8/24	F	0600 - 1800 Set 0700 - 1900 Drift	All except Upper	All
			Same Monday, Friday schedule for remainder of year	

Table 16. Aerial survey set gillnet counts by subdistrict, Upper Cook Inlet, 1984.

Date	Central District					Northern District	
	Upper	Kalgin	Kustatan	Western	Chinitna	General	Eastern
6/18				146			
6/29		85					
7/02	503[1]						
7/06	478[1]	128		155	16		
7/09	645					118	86
7/10	550[1]						
7/13	535						
7/16						103	87
7/27						105	91

[1] South of mid-Kalifonsky only.

Table 17. Buyers/processors of Upper Cook Inlet salmon, 1984.

Alaska Fresh, Inc., DBA 10th & M Seafoods, 1020 M St., Anchorage, AK 99501

Alaska Ocean Products, P.O. Box 288, Clam Gulch, AK 99568

Alaska Wild Salmon Company, 140 Eagle St., #201, Anchorage, AK 99501

Alaskan Fish, David W. Johnson, St. Rt. 2, Box 279X, Sterling, AK 99672

All Alaskan Seafoods, Box 646, Kodiak, AK 99615 Mel Morris 486-3266

American Salmon Co., Drawer E, Seldovia, AK 99663 (Galley)

Anpac, Inc., 3605 Arctic Blvd. S. #430, Anchorage, AK 99502

Bessie M, Box 1057, Homer, AK 99603

Chugach AK. Fisheries, Inc., 4241 - 21st Ave. W. #204, Seattle, WA 98199
(Drawer E, Port Graham)

Clipper Ship, Inc., P.O. Box 3541, Homer, AK 99603

Columbia Wards Fisheries, Box 450, Kenai, AK 99611

Cook Inlet Processing, 1035 W. Northern Lights Blvd., Anchorage, AK 99503
(Box 8163 NRB, Kenai, AK 99611)

D & A Enterprise, P.O. Box 1522, Seward, AK 99664

D & G Enterprises, PP Box 773435, Eagle River, AK 99577

Dragnet Fisheries Co., Inc., P.O. Box 3992, Kenai, AK 99611

Ed's Kasilof Seafoods, Inc., P.O. Box 18, Kasilof, AK 99610

Favco, Box 2323, Anchorage, AK 99510

Fisherman's Packing Inc., Drawer 2601, Kenai, AK 99611

Icicle Seafoods, Inc., P.O. Box 398, Homer, AK 99603

Icicle Seafoods, Inc., Ninilchik, AK 99639

Icicle Seafoods, Inc., Box 8, Seward, AK 99664

Katch Canning, Box 851, Homer, AK 99603

Keener Packing, SR 2, Box 738, Soldotna, AK 99669

Kenai Packers, Box 190, Kenai, AK 99611

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Table 17, continued. Buyers/processors of Upper Cook Inlet salmon, 1984.

Little Fishermen Shoppe, 555 W. Northern Lights Blvd., Anchorage, AK 99503
Lobo's Local Seafood, P.O. Box 2170, Homer, AK 99603
Northwest Seafoods Company, P.O. Box 735, LaConner, WA 98257 (Box 7279, Nikishka, AK, Mi. 20, Kenai Spur)
Pacific Princess Seafoods, Joe Nord 283-7295, P.O. Box 4080, Kenai, AK 99611
Pacific Star Seafood Co., P.O. Box 6-1001, Anchorage, AK 99502
R & J Enterprises, SRA Box 1747-M, Anchorage, AK 99507 (Rt. 2, Box 720, Kasilof, AK 99610)
Royal Pacific Fisheries, Box 4100, Kenai, AK 99611
Salamatof Seafoods, Inc., P.O. Drawer 4220, Kenai, AK 99611
Seafoods from Alaska (Gary Erwin), P.O. Box 307, Sterling, AK 99672
Sea-Nik Foods, Box 73, Ninilchik, AK 99639
Seasonal Seafoods, Inc., Box 117, Kasilof, AK 99610
Ursin Seafoods, Inc., 150 Nickerson St. #203, Seattle, WA 98109
Western Alaska Fisheries, Inc., 1111 3rd Ave., Ste. 1210, Seattle, WA (Box 2367, Kodiak, AK)
Whitney-Fidalgo Seafoods, Box 6429, Anchorage, AK 99502

Table 18. Fish Creek (Big Lake) weir counts by date by species, 29 June through 19 September 1984.[1/2]

Date	Sockeye		Coho	
	Daily	Accum	Daily	Accum
6/29	100	100		
6/30	0	100		
7/01	0	100		
7/02	32	132		
7/03	45	177		
7/04	23	200		
7/05	0	200		
7/06	0	200		
7/07	0	200		
7/08	24	224		
7/09	5	229		
7/10	6	235		
7/11	510	745		
7/12	414	1,159		
7/13	1,310	2,469		
7/14	1,947	4,416		
7/15	1,260	5,676		
7/16	571	6,247		
7/17	0	6,247		
7/18	8,740	14,987	1	1
7/19	9,593	24,580	7	8
7/20	11,162	35,742	2	10
7/21	4,927	40,669	0	10
7/22	13,027	53,696	0	10
7/23	11,349	65,045	46	56
7/24	16,143	81,188	59	115
7/25	27,397	108,585	61	176
7/26	11,141	119,726	41	217
7/27	14,461	134,187	93	310
7/28	9,092	143,279	42	352
7/29	3,350	146,629	9	361
7/30	476	147,105	12	373
7/31	6,672	153,777	134	507
8/01	6,357	160,134	74	581
8/02	5,130	165,264	35	616
8/03	2,292	167,556	27	643
8/04	1,346	168,902	7	650
8/05	352	169,254	0	650
8/06	1,820	171,074	12	662
8/07	2,088	173,162	35	697

- Continued -

Table 18, continued. Fish Creek (Big Lake) weir counts by date by species, 29 June through 19 September 1984.[1/2]

Date	Sockeye		Coho	
	Daily	Accum	Daily	Accum
8/08	5,161	178,323	18	715
8/09	1,363	179,686	8	723
8/10	370	180,056	1	724
8/11	822	180,878	6	730
8/12	23	180,901	2	732
8/13	878	181,779	7	739
8/14	663	182,442	13	752
8/15	1,166	183,608	32	784
8/16	680	184,288	33	817
8/17	108	184,396	3	820
8/18	320	184,716	5	825
8/19	587	185,303	5	830
8/20	125	185,428	1	831
8/21	1,126	186,554	6	837
8/22	240	186,794	3	840
8/23	123	186,917	13	853
8/24	2,009	188,926	201	1,054
8/25	1,692	190,618	330	1,384
8/26	595	191,213	186	1,570
8/27	122	191,335	37	1,607
8/28	40	191,375	10	1,617
8/29	60	191,435	16	1,633
8/30	60	191,495	16	1,649
8/31	30	191,525	10	1,659
9/01	236	191,761	22	1,681
9/02	158	191,919	3	1,684
9/03	103	192,022	15	1,699
9/04	28	192,050	40	1,739
9/05	52	192,102	42	1,781
9/06	56	192,158	81	1,862
9/07	65	192,223	54	1,916
9/08	22	192,245	80	1,996
9/09	27	192,272	51	2,047
9/10	38	192,310	160	2,207
9/11	18	192,328	54	2,261
9/12	2	192,330	63	2,324
9/13	6	192,336	95	2,419
9/14	3	192,339	138	2,557
9/15	2	192,341	101	2,658
9/16	2	192,343	58	2,716

- Continued -

Table 18, continued. Fish Creek (Big Lake) weir counts by date by species, 29 June through 19 September 1984.[1][2]

Date	Sockeye		Coho	
	Daily	Accum	Daily	Accum
9/17	3	192,346	71	2,787
9/18	4	192,350	83	2,870
9/19	2	192,352	10	2,880
Total				4,510[3]

[1] Personal Communication, Chlupach 1984.
[2] An additional 1,630 coho salmon were counted during stream survey and are included in total.
[3] 2,359 sockeye salmon and 49 coho salmon which were precocious males are not included in totals.

Table 19. Packers Creek (Kalgin Island) sockeye salmon weir counts by date, 15 May through 4 September 1984.[1]

Date	Daily	Accum	Date	Daily	Accum
5/15	0	0	6/24	1	1,098
5/16	1	1	6/25	6	1,104
5/17	1	2	6/26	0	1,104
5/18	0	2	6/27	17	1,121
5/19	0	2	6/28	18	1,139
5/20	1	3	6/29	21	1,160
5/21	0	3	6/30	29	1,189
5/22	0	3	7/01	27	1,216
5/23	0	3	7/02	43	1,259
5/24	0	3	7/03	60	1,319
5/25	2	5	7/04	208	1,527
5/26	0	5	7/05	5	1,532
5/27	1	6	7/06	0	1,532
5/28	0	6	7/07	176	1,708
5/29	2	8	7/08	6	1,714
5/30	31	39	7/09	6	1,720
5/31	7	46	7/10	18	1,738
6/01	1	47	7/11	42	1,780
6/02	0	47	7/12	93	1,873
6/03	0	47	7/13	15	1,888
6/04	2	49	7/14	6	1,894
6/05	13	62	7/15	21	1,915
6/06	30	92	7/16	2	1,917
6/07	9	101	7/17	18	1,935
6/08	1	102	7/18	15	1,950
6/09	1	103	7/19	186	2,136
6/10	111	214	7/20	132	2,268
6/11	14	228	7/21	151	2,419
6/12	11	239	7/22	17	2,436
6/13	5	244	7/23	63	2,499
6/14	119	363	7/24	14	2,513
6/15	97	460	7/25	131	2,644
6/16	59	519	7/26	209	2,853
6/17	71	590	7/27	323	3,176
6/18	114	704	7/28	967	4,143
6/19	67	771	7/29	2,186	6,329
6/20	14	785	7/30	347	6,676
6/21	0	785	7/31	795	7,471
6/22	115	900	8/01	1,125	8,596
6/23	197	1,097	8/02	494	9,090

- Continued -

Table 19, continued. Packers Creek (Kalgin Island) sockeye salmon weir counts by date, 15 May through 4 September 1984.[1]

Date	Daily	Accum	Date	Daily	Accum
8/03	1,163	10,253	8/20	2,711	19,236
8/04	342	10,595	8/21	909	20,145
8/05	138	10,733	8/22	2,573	22,718
8/06	277	11,010	8/23	2,467	25,185
8/07	303	11,313	8/24	2,212	27,397
8/08	368	11,681	8/25	969	28,366
8/09	185	11,866	8/26	472	28,838
8/10	149	12,015	8/27	419	29,257
8/11	282	12,297	8/28	409	29,666
8/12	570	12,867	8/29	389	30,055
8/13	334	13,201	8/30	295	30,350
8/14	232	13,433	8/31	127	30,477
8/15	338	13,771	9/01	210	30,687
8/16	351	14,122	9/02	128	30,815
8/17	423	14,545	9/03	49	30,864
8/18	449	14,994	9/04	0	30,864
8/19	1,531	16,525			

[1] Source: Marcuson 1985.

Table 20. Tyonek subsistence salmon harvest by period, 1984.

Date	No. of Nets	Chinook	Sockeye	Coho	Pink	Chum
5/15	12	8	0	0	0	0
5/17	14	15	0	0	0	0
5/18	8	22	2	0	0	0
5/22	14	161	9	0	0	0
5/24	19	225	18	0	0	0
5/25	15	61	20	0	0	0
5/29	22	369	26	0	0	0
5/31	9	304	46	0	0	0
6/01	17	148	24	0	0	0
6/05	9	92	18	0	0	0
6/07	12	336	56	0	0	0
6/08	6	187	12	0	0	0
6/12	13	272	7	0	0	0
6/14	7	60	1	0	0	0
6/15	4	62	4	0	0	0
6/16	3	12	5	0	0	0
6/23	4	20	20	0	0	0
6/30	2	6	6	0	0	0
7/07	2	4	12	0	0	0
7/14	0	0	0	0	0	0
7/21	1	0	0	10	0	0
7/28	0	0	0	0	0	0
8/04	1	0	5	11	3	8
8/11	2	0	6	8	0	0
8/18	0	0	0	0	0	0
8/25	1	0	0	12	0	7
9/01	1	0	1	0	0	0
9/08	0	0	0	0	0	0
9/15	3	0	12	14	0	1
9/22	0	0	0	0	0	0
9/29	0	0	0	0	0	0
10/06	1	0	0	4	0	4
10/13	1	0	0	7	0	3
Total		2,364	310	66	3	23

Data Source: Browning (1985A).

Table 21. Salmon harvest by period for the Kasilof River personal use fishery, 1984.

Period Date	Nets	Sockeye		Chinook	
		Period	Accum	Period	Accum
6/21	143	500	500	27	27
6/22	166	1,014	1,514	22	49
6/23	154	2,281	3,795	40	89
6/24	148	1,330	5,125	8	97
6/25	100	985	6,110	13	110
6/26	98	2,031	8,141	20	130
6/27	72	2,289	10,430	14	144
6/28	65	2,496	12,926	21	165
Total	$\bar{x}$ = 118		12,926		165

Data Source: Browning (1985B).

Table 22. Age, weight and length data from commercially harvested herring, Tuxedni Bay, 26-29 April 1984.

Age (years)	Sex			Total	% of Total	Weight			Standard Length		
	Male	Female	Unk.			Mean (gm)	Standard Dev.	Number Weighed	Mean (mm)	Standard Dev.	Number Measured
1	--	--	--	--	--	--	--	--	--	--	--
2	--	--	--	--	--	--	--	--	--	--	--
3	1	1	--	2	.6	145	4.9	2	227	10.6	2
4	20	40	--	60	17.4	155	21.4	60	232	10.4	60
5	15	22	--	37	10.7	160	21.1	37	236	11.8	37
6	48	61	--	109	31.6	177	25.2	109	240	11.7	109
7	34	32	--	66	19.1	197	26.9	66	248	11.3	66
8	21	29	--	50	14.5	215	27.0	50	253	10.3	50
9+	9	12	--	21	6.1	216	39.8	21	255	12.4	21
Total	148	197	--	345	100.0	183	33.5	345	243	13.6	345

Table 23. Age, weight and length data from commercially harvested herring, Tuxedni Bay, 21-24 May 1984.

Age (years)	Sex			Total	% of Total	Weight			Standard Length		
	Male	Female	Unk.			Mean (gm)	Standard Dev.	Number Weighed	Mean (mm)	Standard Dev.	Number Measured
1	--	--	--	--	--	--	--	--	--	--	--
2	--	--	--	--	--	--	--	--	--	--	--
3	13	11	--	24	6.7	129	25.3	24	214	11.5	24
4	26	49	--	75	20.8	146	20.1	75	222	9.5	75
5	36	57	--	93	25.8	161	25.8	93	227	10.6	93
6	27	76	--	103	28.6	180	24.5	103	236	10.1	103
7	17	19	--	36	10.0	180	36.7	36	235	13.3	36
8	11	4	--	15	4.2	192	37.5	15	240	13.6	15
9+	5	9	--	14	3.9	227	50.6	14	253	12.1	14
Total	135	225	--	360	100.0	167	34.2	360	230	13.5	360

Table 24. Age, weight and length data from commercially harvested herring, Chinitna Bay, 1984.

Age (years)	Sex			Total	% of Total	Weight			Standard Length		
	Male	Female	Unk.			Mean (gm)	Standard Dev.	Number Weighed	Mean (mm)	Standard Dev.	Number Measured
1	--	--	--	--	--	--	--	--	--	--	--
2	--	--	--	--	--	--	--	--	--	--	--
3	--	1	--	1	.3	240	--	1	251	--	1
4	19	33	--	52	17.0	160	16.1	52	237	8.4	52
5	27	35	--	62	20.3	173	20.2	62	244	8.8	62
6	50	54	--	104	34.0	189	24.8	104	249	10.8	104
7	26	16	--	42	13.7	197	20.1	42	251	11.0	42
8	13	18	--	31	10.1	207	25.0	31	258	9.6	31
9+	6	8	--	14	4.6	223	50.3	14	265	13.7	14
Total	141	165	--	306	100.0	186	29.0	306	248	12.3	306

Table 25. Age, weight and length data from commercially harvested herring, eastside, 1984.

Age (years)	Sex			Total	% of Total	Weight			Standard Length		
	Male	Female	Unk.			Mean (gm)	Standard Dev.	Number Weighed	Mean (mm)	Standard Dev.	Number Measured
1	--	--	--	--	--	--	--	--	--	--	--
2	--	--	--	--	--	--	--	--	--	--	--
3	--	2	--	2	.4	152	8.5	2	236	0.0	2
4	23	39	--	62	12.9	149	12.8	62	228	7.7	62
5	29	27	--	56	11.6	162	15.7	56	234	8.0	56
6	85	157	--	242	50.3	168	20.4	242	237	10.8	242
7	31	38	--	69	14.3	187	24.9	69	245	11.3	69
8	17	21	--	38	7.9	195	26.7	38	245	9.8	38
9+	3	9	--	12	2.5	231	46.4	12	258	14.4	12
Total	188	293	--	481	100.0	171	26.5	481	237	11.8	481

Table 26. Seldovia District tide tables.

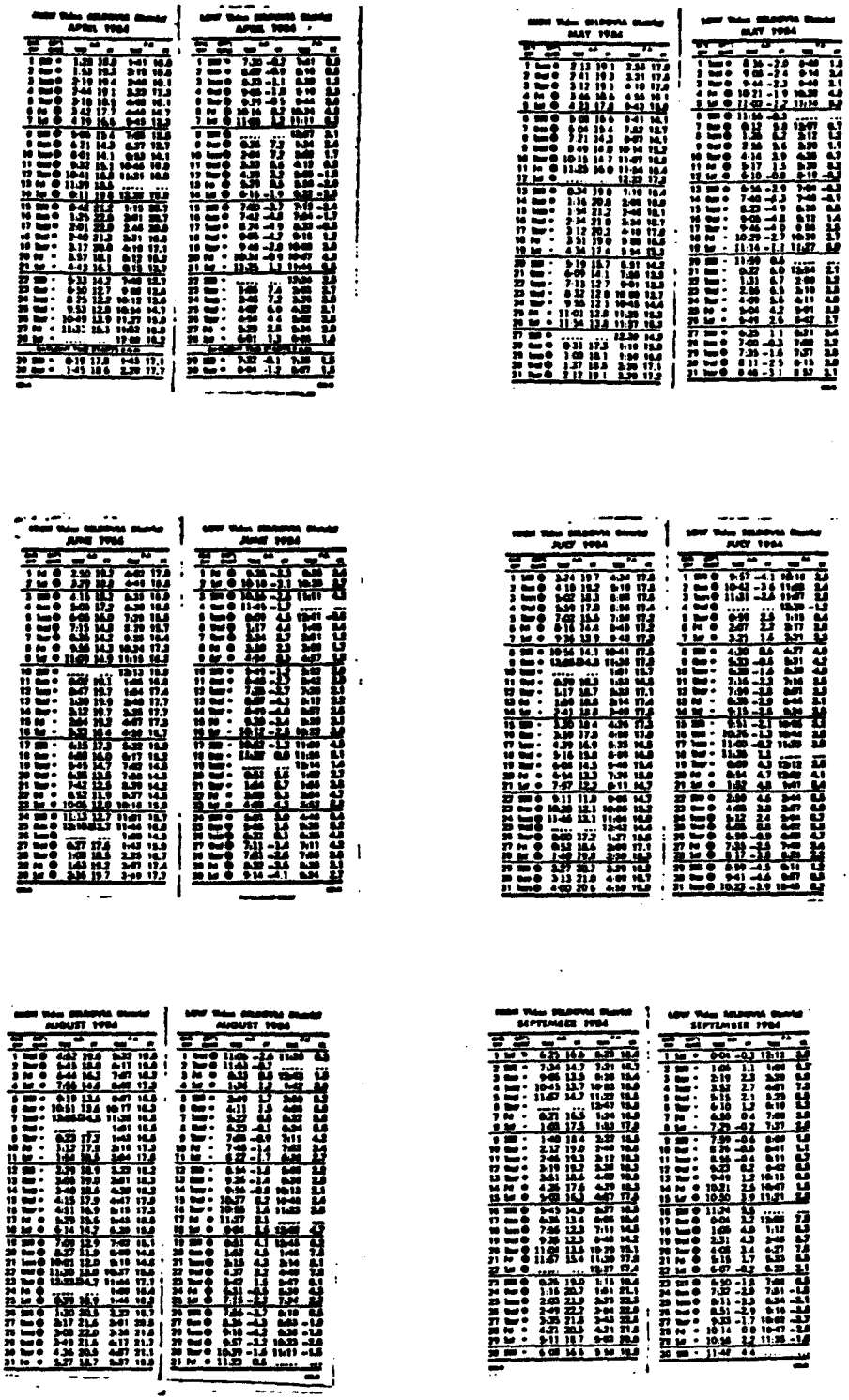
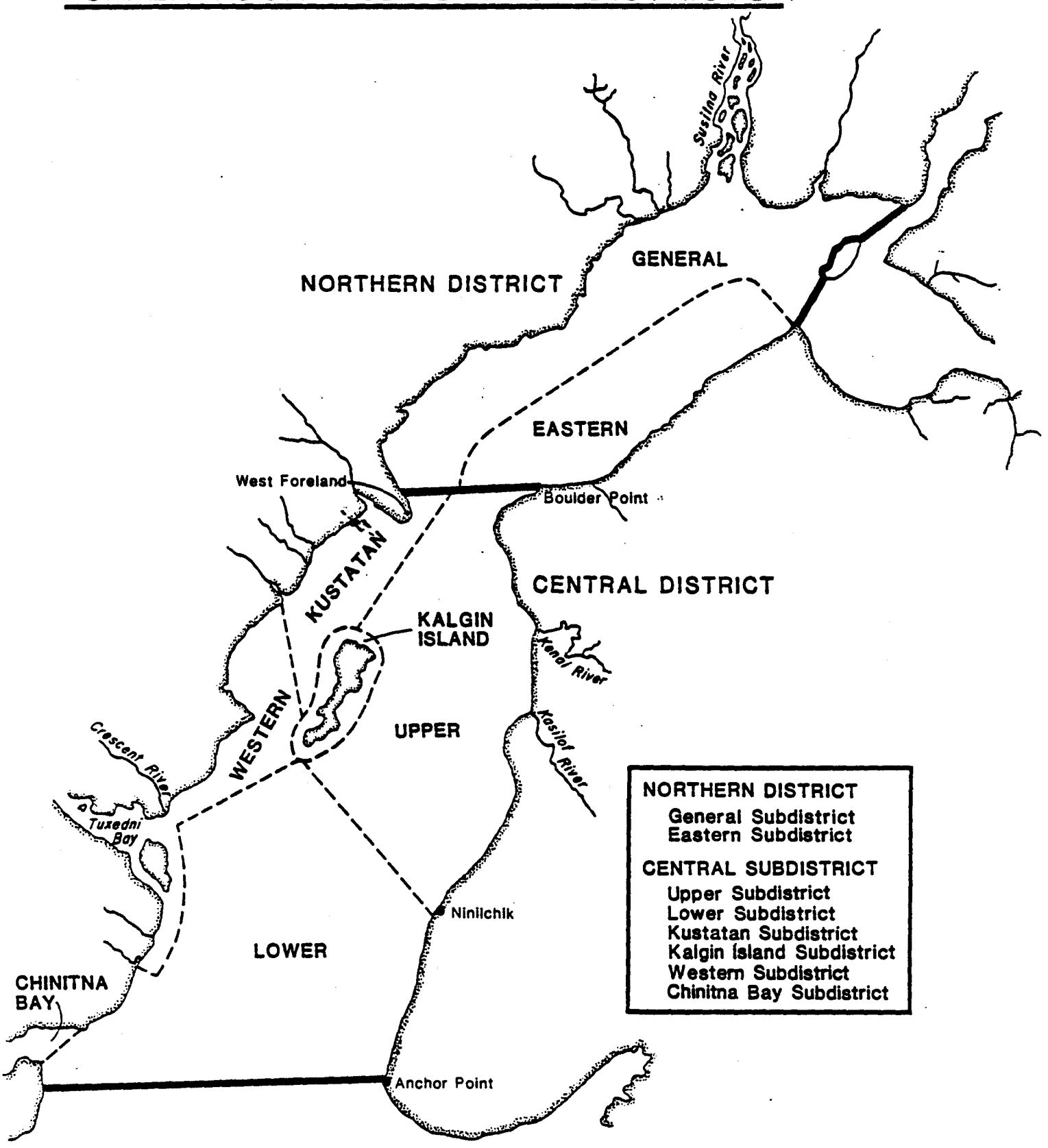


Figure 1.

UPPER COOK INLET SALMON DISTRICTS



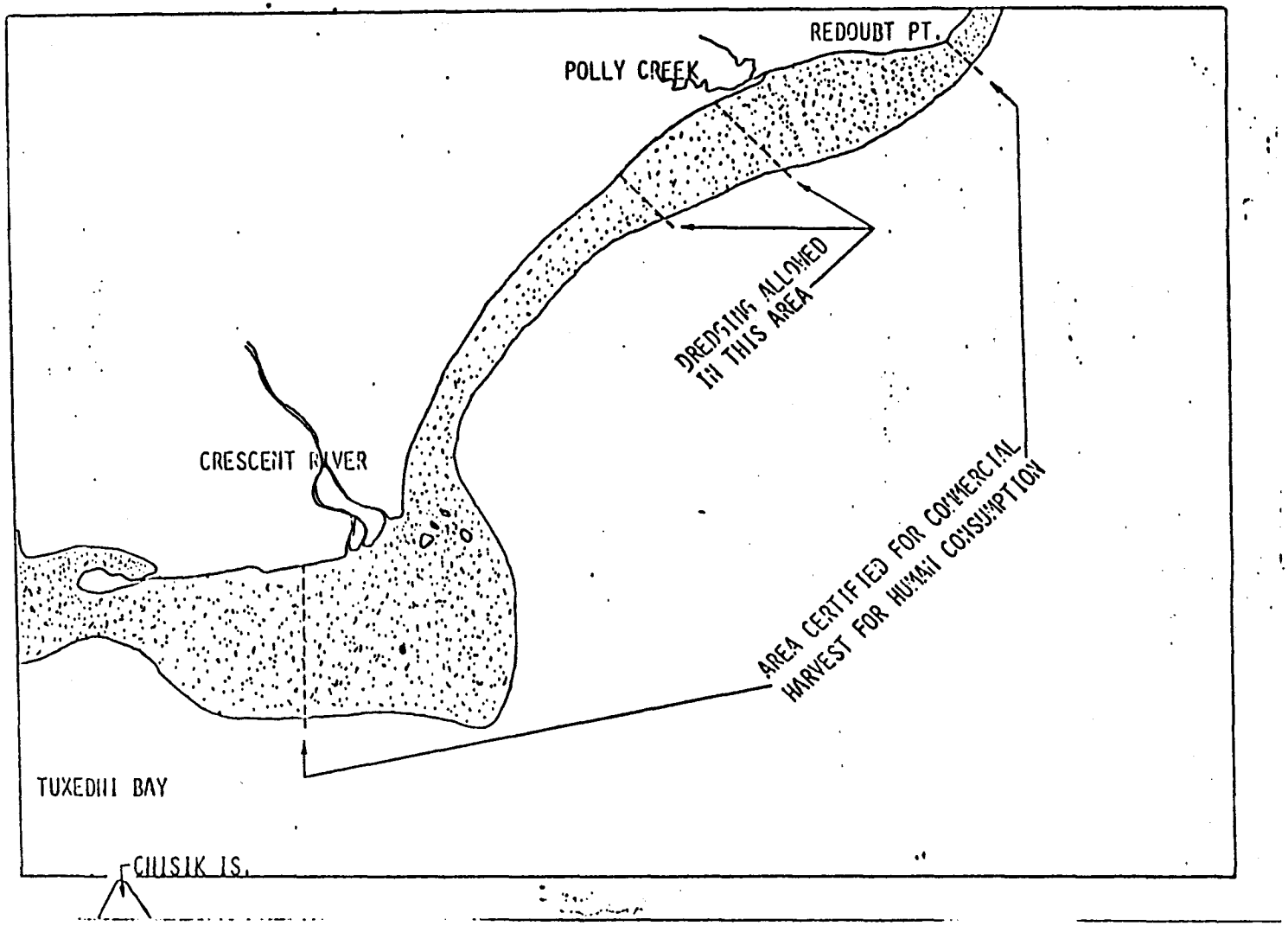


Figure 2. Polly Creek-Crescent River razor clam beach.

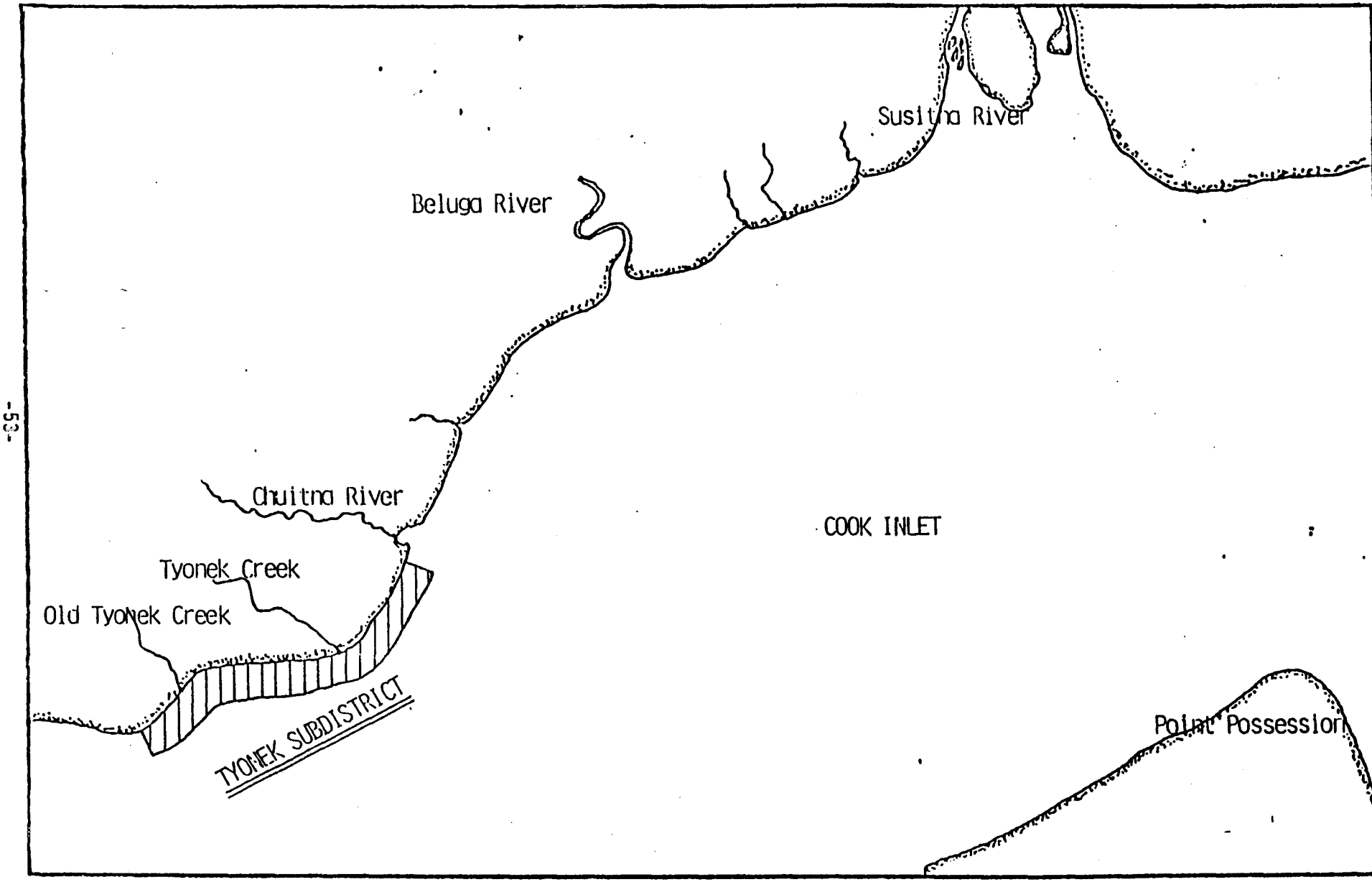


Figure 3. Tyonek Subdistrict.

Appendix Table 1. Upper Cook Inlet commercial chinook salmon harvest by gear type and area, 1966-1984.

Year	Central District Drift Gillnet		Central District Set Gillnet				Northern District Set Gillnet	
			Eastside		Kalgin/Westside			
	Number	%	Number	%	Number	%	Number	%
1966	392	5	7,329	86	401	4	422	5
1967	489	6	6,686	84	500	7	184	2
1968	182	4	3,304	73	579	13	471	10
1969	363	3	5,834	47	3,295	27	2,904	23
1970	367	4	5,366	64	1,165	14	1,460	17
1971	237	1	7,055	36	2,875	14	9,598	49
1972	375	1	8,600	53	2,199	14	4,912	31
1973	244	5	4,411	85	369	7	170	3
1974	422	6	5,570	85	425	6	169	3
1975	250	5	3,678	77	716	15	129	3
1976	692	6	8,249	76	1,469	13	457	5
1977	3,411	23	9,732	66	1,084	7	565	4
1978	2,072	12	12,468	72	2,093	12	669	4
1979	1,089	8	8,671	63	2,264	17	1,714	12
1980	889	6	9,643	70	2,273	16	990	7
1981	2,319	19	8,359	68	837	7	725	6
1982	1,293	6	13,658	65	3,203	15	2,716	13
1983	1,124	5	15,043	73	3,534	17	933	5
1984[1]	509	6	5,805	66	1,620	18	885	10
Ave.	880	7	7,866	69	1,626	13	1,583	11

[1] Preliminary data.
Data Source: Soldotna ADF&G Honeywell computer files.

Appendix Table 2. Upper Cook Inlet commercial sockeye salmon harvest by gear type and area, 1966-1984.

Year	Central District Drift Gillnet		Central District Set Gillnet				Northern District Set Gillnet	
			Eastside		Kalgin/Westside			
	Number	%	Number	%	Number	%	Number	%
1966	1,103,261	60	485,330	26	132,443	7	131,080	7
1967	890,152	65	305,431	22	66,414	5	118,065	8
1968	561,737	51	317,535	29	85,049	7	140,575	13
1969	371,751	54	210,877	31	71,191	10	38,065	5
1970	474,718	64	142,701	19	62,724	9	66,458	9
1971	423,107	66	111,505	17	61,639	10	40,533	6
1972	505,935	57	204,617	23	83,422	10	85,737	10
1973	375,695	56	188,743	28	59,973	9	45,614	7
1974	265,751	53	136,389	27	52,957	11	41,563	8
1975	368,116	54	177,336	26	67,758	10	65,526	10
1976	1,055,767	63	476,376	28	62,338	4	69,649	5
1977	1,073,098	52	751,368	37	104,265	5	123,780	6
1978	1,803,358	69	660,918	25	105,767	4	51,624	2
1979	454,707	49	248,828	27	108,422	12	112,449	12
1980	770,247	49	559,812	35	137,922	9	105,647	7
1981	633,145	44	496,193	35	60,220	4	249,662	17
1982	2,103,429	65	971,423	30	66,952	2	118,060	4
1983	3,222,007	64	1,508,963	30	134,544	3	184,219	4
1984[1]	1,228,600	58	495,788	24	167,432	8	210,947	10
Ave.	930,767	57	444,770	28	89,023	7	105,224	8

[1] Preliminary data.
Data Source: Soldotna ADF&G Honeywell computer files.

Appendix Table 3. Upper Cook Inlet commercial coho salmon harvest by gear type and area, 1966-1984.

Year	Central District Drift Gillnet		Central District Set Gillnet				Northern District Set Gillnet	
			Eastside		Kalgin/Westside			
	Number	%	Number	%	Number	%	Number	%
1966	80,901	28	68,877	24	59,509	20	80,550	28
1967	53,071	30	40,738	23	40,066	22	43,854	25
1968	167,383	36	80,828	17	63,301	14	156,648	33
1969	33,064	33	18,988	19	28,392	28	20,425	20
1970	114,392	41	30,318	10	52,363	19	82,722	30
1971	35,491	35	16,589	17	26,188	26	22,094	22
1972	21,578	27	24,673	30	15,319	19	19,346	24
1973	31,784	30	23,901	23	24,744	24	23,944	23
1974	75,640	38	36,837	19	40,610	20	47,038	23
1975	88,569	40	46,209	21	53,910	24	33,051	15
1976	80,731	39	47,873	23	42,224	20	37,850	18
1977	110,184	57	23,693	12	38,093	20	20,623	11
1978	76,252	35	34,141	16	61,711	28	47,256	21
1979	114,496	43	29,727	11	68,306	26	52,635	20
1980	89,510	33	40,281	15	51,487	19	90,098	33
1981	226,257	47	36,031	8	88,492	18	134,362	28
1982	416,274	53	108,393	14	182,205	23	85,352	11
1983	326,962	64	37,666	8	97,827	18	53,867	10
1984[1]	208,450	47	36,530	8	87,421	20	110,218	25
Ave.	123,735	39	41,173	17	59,061	22	61,154	22

[1] Preliminary data.
Data Source: Soldotna ADF&G Honeywell computer files.

Appendix Table 4. Upper Cook Inlet commercial pink salmon harvest by gear type and area, 1966-1984.

Year	Central District Drift Gillnet		Central District Set Gillnet				Northern District Set Gillnet	
			Eastside		Kalgin/Westside			
	Number	%	Number	%	Number	%	Number	%
1966	593,654	30	969,624	48	70,507	4	371,960	18
1967	7,475	23	13,038	40	3,256	10	8,460	27
1968	880,512	39	785,887	35	75,755	3	534,839	23
1969	8,336	25	11,416	35	5,714	17	7,680	23
1970	346,485	42	281,067	34	24,763	3	174,193	21
1971	6,433	18	18,097	51	2,637	7	8,423	24
1972	115,096	18	403,706	64	18,936	3	90,830	15
1973	91,901	28	80,596	25	16,437	5	137,249	42
1974	140,734	29	291,408	60	9,014	2	42,879	9
1975	113,868	34	112,423	34	18,385	5	90,953	27
1976	599,600	48	479,009	38	30,044	2	148,090	12
1977	286,308	52	125,817	23	25,212	4	116,518	21
1978	934,178	55	372,865	22	54,785	3	327,270	20
1979	19,554	27	20,033	27	7,061	10	26,332	36
1980	964,526	54	299,444	17	47,963	2	474,488	27
1981	53,888	42	15,659	12	4,276	4	53,325	42
1982	270,380	35	432,715	55	14,242	2	73,307	8
1983	26,628	40	18,310	25	3,785	5	21,604	30
1984[1]	279,820	45	222,026	36	16,723	3	103,941	17
Even Yr	512,499	41	453,775	37	36,273	3	234,180	19
Odd Yr	68,266	39	46,154	26	9,640	5	52,283	30

[1] Preliminary data.
Data Source: Soldotna ADF&G Honeywell computer files.

Appendix Table 5. Upper Cook Inlet commercial chum salmon harvest by gear type and area, 1966-1984.

Year	Central District Drift Gillnet		Central District Set Gillnet				Northern District Set Gillnet	
			Eastside		Kalgin/Westside			
	Number	%	Number	%	Number	%	Number	%
1966	424,972	80	7,461	1	64,725	12	35,598	7
1967	233,041	79	399	0	25,013	8	38,384	13
1968	1,002,900	91	1,563	0	44,986	4	58,454	5
1969	238,497	89	399	0	16,949	6	11,836	5
1970	705,467	90	1,228	0	48,783	6	24,507	3
1971	274,567	85	128	0	32,647	10	16,603	5
1972	564,253	90	1,727	0	40,567	7	19,780	3
1973	605,730	90	1,965	0	29,019	5	30,847	5
1974	344,594	87	506	0	15,346	4	36,492	9
1975	886,474	93	979	0	32,741	4	30,787	3
1976	405,773	86	1,484	0	47,877	11	14,050	3
1977	1,153,454	93	1,413	0	54,708	5	23,861	2
1978	489,065	86	4,617	1	40,946	7	37,331	6
1979	609,239	94	907	0	30,342	5	9,270	1
1980	339,970	88	2,147	0	30,105	8	16,728	4
1981	756,848	91	2,415	0	26,513	3	46,208	6
1982	1,348,510	94	4,777	0	36,647	3	43,006	3
1983	1,044,644	94	2,764	0	38,129	3	29,321	3
1984[1]	567,452	83	4,219	1	36,607	5	75,846	11
Ave.	631,339	89	2,163	0	36,455	6	31,522	5

[1] Preliminary data.
Data Source: Soldotna ADF&G Honeywell computer files.

Appendix Table 6. Upper Cook Inlet commercial salmon harvest by gear type and area, 1966-1984.

Year	Central District Drift Gillnet		Central District Set Gillnet				Northern District Set Gillnet	
			Eastside		Kalgin/Westside			
	Number	%	Number	%	Number	%	Number	%
1966	2,203,180	47	1,538,621	33	327,585	7	619,610	13
1967	1,184,228	63	366,292	19	135,249	7	208,947	11
1968	2,612,714	53	1,189,117	24	269,670	5	890,987	18
1969	552,011	59	247,514	23	125,541	11	80,910	7
1970	1,641,429	62	460,680	18	189,798	7	349,340	13
1971	739,835	66	153,374	14	125,986	11	97,251	9
1972	1,207,217	54	643,323	29	160,443	7	220,605	10
1973	1,105,354	62	299,616	17	130,542	7	237,824	14
1974	827,141	52	471,210	30	118,352	7	168,141	11
1975	1,457,277	66	340,625	15	173,510	8	220,446	11
1976	2,142,563	59	1,012,991	28	183,952	5	270,096	8
1977	2,626,455	65	912,023	22	223,362	6	285,347	7
1978	3,304,925	65	1,085,009	21	265,302	5	464,150	9
1979	1,199,085	62	308,166	16	216,395	11	202,400	11
1980	2,165,142	54	911,327	23	269,750	6	687,951	17
1981	1,672,457	58	558,657	19	180,338	6	484,282	17
1982	4,139,886	66	1,530,966	25	303,249	4	322,441	5
1983	4,621,365	70	1,582,746	24	277,819	4	289,944	4
1984[1]	2,284,831	59	764,638	20	309,803	8	501,837	13
Ave.	1,988,794	60	756,664	22	209,823	7	347,500	11

[1] Preliminary data.
Data Source: Soldotna ADF&G Honeywell computer files.

Appendix Table 7. Commercial salmon harvest by species, Upper Cook Inlet, 1966-1984.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1966	8,544	1,852,114	289,837	2,005,745	532,756	4,688,996
1967	7,859	1,380,062	177,729	32,229	296,837	1,894,716
1968	4,536	1,104,904	469,850	2,278,197	1,119,114	4,976,601
1969	12,407	692,244	100,962	34,030	269,842	1,109,485
1970	8,358	746,634	279,989	826,639	800,829	2,662,449
1971	19,765	636,798	100,636	35,624	327,029	1,119,852
1972	16,086	879,724	80,933	628,576	630,016	2,235,335
1973	5,194	670,025	104,373	326,183	667,561	1,773,336
1974	6,586	497,160	200,125	484,035	396,938	1,584,844
1975	4,773	678,736	221,739	335,629	950,981	2,191,858
1976	10,867	1,664,131	208,710	1,256,743	469,806	3,610,257
1977	14,792	2,052,511	192,599	553,855	1,233,722	4,047,479
1978	17,302	2,621,667	219,360	1,689,098	571,959	5,119,386
1979	13,738	924,415	265,166	72,982	650,357	1,926,658
1980	13,795	1,573,637	271,378	1,786,430	390,810	4,036,050
1981	12,240	1,439,235	485,148	127,169	833,549	2,897,341
1982	20,870	3,259,864	793,937	790,648	1,433,866	6,299,185
1983	20,634	5,049,733	516,322	70,327	1,114,858	6,771,874
1984[1]	8,819	2,102,767	442,619	622,510	684,124	3,860,839
Average	11,956	1,569,808	285,337	Even 1,236,862 Odd 176,448	703,945	3,305,607

[1] Preliminary data.
Data Source: Soldotna ADF&G Honeywell computer files.

Appendix Table 8. Approximate exvessel value of the Upper Cook Inlet commercial salmon catch, 1960-1984.[1]

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	140	1,334	307	663	343	2,787
1961	100	1,687	118	16	204	2,125
1962	100	1,583	342	1,274	582	3,981
1963	89	1,388	193	13	236	1,919
1964	20	1,430	451	1,131	646	3,678
1965	50	2,099	109	70	230	2,558
1966	50	2,727	295	823	338	4,233
1967	49	2,135	187	13	202	2,586
1968	30	1,758	515	1,209	843	4,355
1969	70	1,231	109	23	204	1,637
1970	49	1,135	354	387	745	2,670
1971	189	1,102	143	22	316	1,772
1972	217	1,795	135	473	834	3,454
1973	122	3,214	320	363	2,134	6,153
1974	210	3,058	843	946	1,521	6,578
1975	65	2,596	821	423	2,753	6,658
1976	276	8,626	818	1,879	2,040	13,639
1977	525	13,274	933	772	5,991	21,495
1978	667	26,128	1,388	2,154	2,217	32,554
1979	625	8,094	1,658	89	4,201	14,667
1980	417	7,932	902	2,114	1,516	12,881
1981	422	11,071	2,638	179	2,005	16,315
1982	753	25,029	4,139	515	5,851	36,287
1983	585	23,841	1,603	38	3,195	29,362
1984[2]	281	13,458	1,813	471	1,974	17,997

[1] Expressed in thousands of dollars.
[2] Preliminary data.
Data Source: 1960-1971 - Unpublished ADF&G files.
1972-1984 - Average weight x average price per pound x catch (all from CFEC and ADF&G computer files).

Appendix Table 9. Commercial herring harvest by area, Upper Cook Inlet, 1973-1984.

Year	Harvest (Pounds) Tuxedni Bay	Chinitna Bay	Eastside	Total
1973	0	0	27,704	27,704
1974	0	0	73,386	73,386
1975	0	0	12,483	12,483
1976	0	0	11,625	11,625
1977	0	0	34,618	34,618
1978	0	110,693	16,548	127,241
1979	49,679	192,350	134,625	376,654
1980	172,994	40,012	74,766	287,772
1981	169,905	100,989	172,408	443,302
1982	100,426	183,616	120,378	404,420
1983	476,364	98,356	330,563	905,283
1984[1]	318,027	181,260	235,108	734,395

[1] Preliminary data.
Data Source: Final IBM statistical files, ADF&G, Juneau.

Appendix Table 10. Commercial harvest of razor clams in Cook Inlet, 1919-1984.[1]

Year	Pounds	Year	Pounds
1919	76,968	1952	0
1920	11,952	1953	0
1921	72,000	1954	0
1922	510,432	1955	0
1923	470,280	1956	0
1924	156,768	1957	0
1925	0	1958	0
1926	0	1959	0
1927	25,248	1960	372,872
1928	0	1961	277,830
1929	0	1962	195,650
1930	0	1963	0
1931	No Record	1964	0
1932	93,840	1965	0
1933	No Record	1966	0
1934	No Record	1967	0
1935	No Record	1968	0
1936	No Record	1969	0
1937	8,328	1970	0
1938	No Record	1971	14,755
1939	No Record	1972	31,360
1940	No Record	1973	34,415
1941	0	1974	No Record
1942	0	1975	10,020
1943	0	1976	No Record
1944	0	1977	1,762
1945	15,000	1978	45,931
1946	11,424	1979	144,358
1947	11,976	1980	140,420
1948	2,160	1981	441,949
1949	9,672	1982	460,639
1950	304,073	1983[2]	269,618
1951	112,320	1984[2]	261,742

[1] Data for 1919-1968 from Nickerson (1975). Data for 1969-1983 from IBM fish ticket summaries (ADF&G, Division of Commercial Fisheries, Computer Services).
[2] Preliminary.

Appendix Table 11. Registered units of gillnet fishing effort by gear type in Cook Inlet, 1960-1984.[1]

Year	Drift			Set			Total
	Resident	Non-Resident	Sub-total	Resident	Non-Resident	Sub-total	
1960	221	67	288	511	59	570	858
1961	279	93	372	564	22	586	958
1962	260	112	372	589	28	617	989
1963	333	139	472	626	34	660	1,132
1964	323	145	468	596	35	631	1,099
1965	329	145	474	556	34	590	1,064
1966	328	176	504	580	48	628	1,132
1967	350	186	536	554	50	604	1,140
1968	407	204	611	638	43	681	1,292
1969	497	208	687	686	42	728	1,415
1970	537	220	757	707	65	772	1,529
1971	519	191	710	693	38	731	1,441
1972	419	152	571	672	35	701	1,272
1973	516	146	662	632	43	775	1,437
1974	458	150	608	764	39	803	1,411
1975	291	162	453	613	44	657	1,110
1976	343	171	514	669	42	711	1,225
1977	360	179	539	690	41	731	1,270
1978	366	183	549	698	44	742	1,291
1979	372	182	554	700	44	744	1,298
1980	373	179	554	697	47	744	1,298
1981	414	185	599	688	59	747	1,346
1982	416	175	591	697	51	748	1,339
1983	417	170	587	685	60	745	1,332
1984	426	162	588	672	72	744	1,332

[1] Data Source: 1960-1974 ADF&G unpublished reports.
1975-1984 Commercial Fisheries Entry Commission.

Appendix Table 12. Escapement goals and sonar counts of Kenai River, Kasilof River, and Crescent River sockeye salmon, and Susitna River sockeye salmon, pink salmon, chum salmon and coho salmon.

Year	Kenai River		Kasilof River		Crescent River	
	Escape. Goal	Escape. Estimate	Escape. Goal	Escape. Estimate	Escape. Goal	Escape. Estimate
1968	0	88,000	0	93,000	0	0
1969	150,000	53,000	75,000	46,000	0	0
1970	150,000	73,000	75,000	37,000	0	0
1971	150,000	--	75,000	--	0	0
1972	150,000-250,000	318,000	75,000-150,000	112,000	0	0
1973	150,000-250,000	367,000	75,000-150,000	40,000	0	0
1974	150,000-250,000	161,000	75,000-150,000	64,000	0	0
1975	150,000-250,000	142,000	75,000-150,000	48,000	0	0
1976	150,000-250,000	380,000	75,000-150,000	140,000	0	0
1977	150,000-250,000	708,000	75,000-150,000	155,000	0	0
1978	350,000-500,000	399,000	75,000-150,000	117,000	0	0
1979	350,000-500,000	285,000	75,000-150,000	152,000	50,000	87,000
1980	350,000-500,000	464,000	75,000-150,000	187,000	50,000	91,000
1981	350,000-500,000	408,000	75,000-150,000	257,000	50,000	41,000
1982	350,000-500,000	620,000	75,000-150,000	180,000	50,000	59,000
1983	350,000-500,000	630,000	75,000-150,000	210,000	50,000	92,000
1984	350,000-500,000	345,000	75,000-150,000	232,000	50,000	118,000

Year	Susitna River					
	Sockeye		Pink		Chum	Coho
	Escape. Goal	Escape. Estimate	Escape. Goal	Escape. Estimate	Escape. Index	Escape. Index
1978	200,000	94,000	1,000,000	1,943,000	148,000	101,000
1979	200,000	157,000	0	125,000	49,000	37,000
1980	200,000	191,000	1,000,000	2,047,000	8,000	43,000
1981	200,000	340,000	0	113,000	46,000	33,000
1982	200,000	216,000[1]	1,000,000	N/A[2]	N/A[2]	N/A[2]
1983	200,000	112,000[3]	0	101,000[4]	N/A[2]	N/A[2]
1984	200,000	194,000	1,000,000	1,386,321[4]	791,466[4]	112,874[4]

[1] Poor field conditions make this a minimum estimate; mark/recapture estimate from Su-Hydro studies was 265,000.
[2] High water conditions prevented obtaining comparable estimates.
[3] Minimum estimate. Combining Yentna sonar with Sunshine Station mark/recapture estimate yields 176,000.
[4] Yentna sonar combined with Sunshine Station mark/recapture estimate.

Appendix Table 13. Average price paid for commercially harvested salmon, Upper Cook Inlet, 1969-1984.[1]

Year	Chinook	Sockeye	Coho	Pink	Chum
1969	0.38	0.28	0.19	0.14	0.12
1970	0.40	0.28	0.25	0.14	0.14
1971	0.37	0.30	0.21	0.15	0.15
1972	0.47	0.34	0.27	0.19	0.20
1973	0.62	0.65	0.50	0.30	0.42
1974	0.88	0.91	0.66	0.46	0.53
1975	0.54	0.63	0.54	0.35	0.41
1976	0.92	0.76	0.61	0.37	0.54
1977	1.26	0.86	0.72	0.38	0.61
1978	1.16	1.32	0.99	0.34	0.51
1979	1.63	1.41	0.98	0.34	0.88
1980	1.15	0.85	0.57	0.34	0.53
1981	1.46	1.20	0.83	0.38	0.65
1982	1.27	1.10	0.72	0.18	0.49
1983	0.97	0.74	0.45	0.18	0.36
1984	1.08	1.00	0.64	0.21	0.39

[1] Expressed as dollars paid per pound.
Data Source: 1969-1983 - Commercial Fisheries Entry Commission.
1984 - Preliminary fish ticket averages.

Appendix Table 14. Average weights of commercially harvested salmon, Upper Cook Inlet, 1972-1984.[1]

Year	Average Weight (lbs)				
	Chinook	Sockeye	Coho	Pink	Chum
1972	28.76	6.00	6.18	3.96	6.62
1973	37.85	7.38	6.13	3.71	7.61
1974	36.20	6.76	6.39	4.25	7.21
1975	25.14	6.07	6.86	3.60	7.06
1976	27.63	6.82	6.43	4.04	8.04
1977	28.19	7.52	6.73	3.67	7.96
1978	33.24	7.55	6.39	3.75	7.60
1979	27.93	6.21	6.38	3.58	7.34
1980	26.29	5.93	5.83	3.48	7.32
1981	23.64	6.41	6.55	3.70	7.66
1982	28.42	6.98	7.24	3.62	8.33
1983	29.24	6.38	6.90	3.04	7.96
1984	N/A	N/A	N/A	N/A	N/A
Average	29.47	6.65	6.43	3.71	7.48

[1] Data Source: Final IBM stat runs of fish ticket data, ADF&G, Juneau. 1984 data not available as of this writing.

Appendix Table 15. Subsistence and personal use salmon harvest, Upper Cook Inlet, 1980-1984.

Fishery	No. of Permits	Chinook	Sockeye	Coho	Pink	Chum
Tyonek Subsistence						
1980	67	1,927	261	0	0	0
1981	70	2,002	269	62	32	13
1982	69	1,574	274	113	15	4
1983	73	2,755	251	78	0	6
1984	70	2,364	310	66	3	23
Non-Commercial Gillnet						
1981	1,108	68	466	12,713	149	305
Kasilof Personal Use						
1982	649	372	7,543	24	17	0
1983	684	307	8,846	0	0	0
1984	698	165	12,926	0	0	0
Fall Coho Personal Use						
1983	295	0	0	712	0	0
1984	309	1	2	2,261	10	7